

The American Journal of Pharmaceutical Education

THE OFFICIAL PUBLICATION OF THE AMERICAN
ASSOCIATION OF COLLEGES OF PHARMACY

"I am talking about that boy of mine, that I'd like to take his place in the world of mankind, in a free life where there are no limitations, and where only his tireless energy is the measure of his achievement. If he were my son, as he may be yours, I'd say linger a little longer on the way (in preparing for your life work) and open the windows of the soul to the greater life that can be yours, because you're a son of God —in a free country."—Adam S. Bennion, a member of the Board of Regents of the University of Utah, an Apostle of the Church of Jesus Christ of Latter Day Saints, and former Vice-President of Utah Light and Power.

Volume XVIII July, 1954 Number 3

**INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN
ASSOCIATION OF COLLEGES OF PHARMACY**

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Alabama Polytechnic Institute, School of Pharmacy, Auburn. (1906)*
L. S. Blake, Dean
Howard College, Division of Pharmacy, Birmingham. (1952)
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Earl R. Series, Dean

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State University of Iowa, College of Pharmacy, Iowa City. (1901)
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Kansas

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*Denotes year institution was admitted to the Association.

THE AMERICAN JOURNAL OF PHARMACEUTICAL EDUCATION

Volume XVIII

July, 1954

Number 3

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Published quarterly by the American Association of Colleges of Pharmacy at Lincoln 8, Nebraska. (Jacob North & Co.) Subscription price \$4.00. Single copies \$1.00. Entered as second class matter July 1, 1937, at the postoffice at Lincoln 8, Nebraska, under the Act of August 24, 1912.

Editorial Office: College of Pharmacy, University of Nebraska, Lincoln, Nebraska
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Bibliographic Tools for Selection of Published Materials in Pharmacy*

KARL A. BAER

Librarian, American Pharmaceutical Association

In 1670, Dr. George Tonstall complained about "the press of books wherewith our age is overpress'd." We might well wonder what his reaction would be if he had to face the deluge of books, journals and reports confronting scientists and librarians of this day and age.

As the output of printed material kept on increasing by leaps and bounds, libraries—small and large—tried in vain to keep up with this development. The need for intelligent selection of the material to take up the valuable and limited shelf space—not to speak of the expense involved in its acquisition—became apparent and more and more urgent. Selection problems are, therefore, a common onus to all libraries today; in the field of pharmacy they do not differ basically from those encountered in general collections. The primary task is always the planning of a general acquisition policy. This policy must then be implemented by the choice of the proper individual titles.

I. Overall Planning

It might be well here to recall some of the pertinent statements made in 1945 by Dr. Glenn L. Jenkins in his Presidential Report:¹ "As the schools continue to develop a more

*At the first meeting of the Joint Committee on Pharmacy College Libraries of the AACP, held in Ann Arbor last November, considerable discussion was had on aids needed by librarians and by members of library committees of the various colleges. Among the aids suggested was a list of bibliographic tools useful in selection of books, periodicals, and other materials for college of pharmacy libraries. It was further felt the various sources should be current ones, with the year 1940 serving in general as the point of departure, and, where practicable, the items in the source list should be annotated. Librarians on the Joint Committee were of the opinion that Mr. Karl A. Baer of the Library of the American Pharmaceutical Association was eminently qualified to prepare such an article. As a consequence, Mr. Baer was requested to undertake this project. After consultation with him and with the Secretary of the American Pharmaceutical Association, the request from the Joint Committee was granted. The article is herewith presented as prepared by Mr. Baer. It is authoritative and deserves careful study and use by librarians in colleges of pharmacy, as well as by others concerned with the improvement of pharmacy college libraries. The Joint Committee and the Association is deeply indebted to Mr. Baer for preparing the article.—R. A. Deno, Chairman, Joint Committee on Pharmacy College Libraries.

extensive program of graduate study and research and to direct their efforts into more specialized fields, there arises a need for additional library resources. . . Securing the special collections or filling in the gaps in the present collection will require not only substantial funds but systematic planning and selection." From this statement it becomes evident that, while many of the aims of pharmaceutical colleges—particularly on the undergraduate level—are identical throughout the country, there are important differences in the graduate programs and fields of specialization. Therefore, our awareness of the considerable value of carefully prepared lists of recommended titles must not blind us to their very definite limitations. Much still remains to be done by the librarian. This is well illustrated by the following verses about a book-wise librarian:

He has reached as near perfection
As one can in book selection.
With the talents that he brings to choose them,
All his pearls they are so fine
That his readers must be swine
Since they cannot be prevailed upon to use them.²

In other words, the librarian can only be successful in his selection if he knows how to balance demand and supply, with proper regard to the specific aim and size of his collection.³ In our field particularly, where the pharmacy collection may belong to an independent college of pharmacy and, therefore, may have to stand on its own feet, or where it may constitute a department of the university library, either by itself or in connection with the dental and/or medical libraries, and therefore can count on supplementation by other collections, too much basic variety of acquisition requirements exists to lay down rules of general validity.

Consequently, a list of reference tools or of recommended titles never enables a person unfamiliar with those basic circumstances as well as with the curriculum, the teaching methods, the special program, the research projects and activities of a certain pharmaceutical college to choose wisely. There can be no doubt that selection is the most highly professional activity in the field of librarianship. It seems indispensable for the librarian in charge of the acquisition pro-

gram of a pharmaceutical college library to have had several years of experience in that library or one quite similar. Only then will he be able to build up and add to his collection with confidence. This holds true even when he has an active library committee. The place of library committees has been well defined by E. Kienzle,⁴ who feels that they should be primarily advisory, that they are unnecessary in small colleges, that they are least useful when they intrude in administration, but most useful in determining policy. The point is, however, that the librarian, whom we assume as a matter of course to have faculty status, should be possessed of the necessary knowledge—general and special—to make his voice heard when acquisition policies are discussed by the library committee. The final responsibility rests with him, and with him alone.

(Re suggestions made by individual faculty members: it is hardly necessary to say that they are most welcome and will always have the librarian's most serious consideration. Confronted with a professor's wish for a specific book, the librarian will practically always accede unless the cost is prohibitive. Advice of individuals concerning general acquisition policies should, however, be carefully examined and then submitted to the full library committee. We generally are apt to overestimate our own special field of endeavor, and faculty members are no exception.)

What we have said applies equally to the counterpart of selection: weeding. A useful discussion of this most important and all-too-frequently neglected problem may be found in the *Symposium: Weeding the medical library*.⁵ In this connection (as well as in purchasing books and accepting gifts), it is well to familiarize oneself with the results of C. F. Gosnell's thorough statistical investigations on the *Obsolescence of books in college libraries*.⁶ He sets the half-life of the book collection at approximately 14 years, i.e., half of the useful titles will be less than 14 years old. Not more than 10% of the books older than 28 years are in active or potential demand. These figures refer to general college libraries, i.e. libraries the holdings of which include the humanities, the social sci-

ences and fiction, which *per se* retain their value much longer than science books. Therefore, we are certainly conservative in saying that a "live" working collection of books in pharmacy should have considerably less than 10% of material older than 28 years. As to journals—and journals are the backbone of every scientific library—Fussler¹ has shown that original papers in the field of chemistry contain 38% references to material published within the last five years, while 57% of them date from the last ten years and only 17% are older than 25 years. To keep these facts in mind is particularly important when it comes to deciding on the acceptance of a donation; experience shows a preponderance of old material in collections acquired in this otherwise painless manner.

II. Selecting Individual Titles

Seldom will the busy librarian have a chance to order any but the most expensive works "on approval" or to get hold of them in some other way beforehand. He will have to depend largely on book lists for noncurrent material and on books reviews for current material.

In the field of pharmacy, we are fortunate to have at our disposal a number of good lists of books and journals recommended for the college library. Nevertheless, considering the fact that Clifton S. Miller² reported only last year that the holdings of departmental pharmaceutical libraries varied from nine to well over 200 journals, and from 100 to over 10,000 books, these lists may let down the librarian whom budgetary considerations compel to be selective. He will have to resolve his doubts concerning several titles covering the same subject by having recourse to the advice of a competent member of the faculty or to book reviews, which may be difficult to find and once found prove to be of little help.

According to H. E. Haines,³ the criteria to be critically noted in reviewing scientific books are form (textbook, reference work, etc.), subject (general, particular), scope (indicating fundamental character and organization), author's qualifications, basis of work, purpose. All too many so-called reviews are merely descriptive and, therefore, severely limited in their usefulness; other reviews are "critical," but only

of such features of secondary importance as format, unimportant factual errors and misprints while their overall tone is habitually laudatory. The librarian will soon enough learn to recognize and disregard this type of review, which was recently scrutinized and properly castigated by Sumner L. Koch.¹⁰ Neither do reviewers endear themselves to librarians by coming up with their criticisms one, two or three years after publication date. Confronted with these undeniably existing shortcomings, the librarian will frequently have to put his trust in the name of a well-known author or reliable publisher. By way of example, and on the basis of Hawkins's bibliography (listed below as No. 13), we may mention here the following firms: Blakiston, Burgess, Lea & Febiger, Lippincott, McGraw-Hill, Saunders, Van Nostrand, and Wiley.

III. A "List of Lists"

The librarian who has not merely the task of keeping his collection up-to-date, but of building it up from scratch in a new school or of eliminating basic weaknesses in an old one, may find the following "list of lists" useful—if he is aware at all times of its limited validity, as outlined under I above.

1. American Association of Colleges of Pharmacy. Committee on Libraries (C. O. Lee, Chairman). Reports for 1941 and 1942. *American Journal of Pharmaceutical Education*, 7: 184-217, April, 1943.
Contains lists of journals of pharmacy (520 titles) and Supplementary Lists: #1 (22 titles, mostly European) and #2 (40 titles, mostly Latin-American), p. 188-217. "Only those journals were included which had the words pharmacy, drug or apothecary in the title or titles where the latter varied." (p. 487).
2. —— —— Report, 1944. *Am.J.Ph.Ed.*, 8:485-490, Oct. 1944; 9:394-405, July 1945.
Contains Supplementary List #3 (over 100 foreign journals culled from Union List), p. 487-490. Also contains Edwin V. Lynn, *Text and reference books in chemistry* (123 titles), p. 394-399, and Edward J. Ireland, *Pharmacy books* (172 titles), p. 399-405. Much old material. Ireland says: "The reader will also find browsing through any of these books that the subject matter does not quickly become obsolete. Even a book like Jacobi LeMort's *Pharmacia* . . . 1688 . . . has definite teaching value."

3. —— —— Report. 1947. *Am.J.Ph.Ed.*, 11:516-521, July 1947.
Contains survey of college papers, bulletins and journals (lists 21 publications).
4. —— —— [List of books]. *Am.J.Ph.Ed.*, 13:670-700, Oct. 1949.
A classified list supplying author, title, date and publisher of over 400 titles. The list is not annotated and does not intend to set up minimum requirements for college libraries; it is largely composed of books published within the past 15 years.
5. —— —— A selected list of modern scientific journals. *Am.J.Ph.Ed.*, 14:614-624, Oct. 1950.
A classified list of some 160 journals giving title, publisher and price, but lacking annotations.
6. —— —— A selected list of titles for pharmacy school libraries. *Am. J. Ph. Ed.*, 16:634-669, Oct. 1952.
A revision of the 1949 list.
7. Brodman, E. *Bibliographical lists for medical libraries*, 2d ed. N.Y., Columbia University School of Library Service, 1949. 90 p.
Chapter V, Pharmacy and *materia medica*, p. 26-29, lists encyclopedias, pharmacopoeias, formularies, specialized and general treatises, indexes, abstracts, reviews and bibliographies (some 50 titles altogether), but no journals. Now largely superseded by Fleming (No. 10 of this list).
8. Cook, E. F., and Martin, E. W. The literature of pharmacy. (In their *Remington's practice of pharmacy*. Easton, Pa., Mack Publishing Company, 1951, p. 26-36). An introduction to the use rather than to the selection of the literature, which is, however, included here because it is compulsory reading for the novice in the pharmacy library field and will offer valuable help to the more experienced librarian. Includes a history of American pharmaceutical literature; goes into some detail about pharmaceutical journals (mergers, etc.); lists house organs.
9. COPNIP list. New York, Sept. 1953 to date. Quarterly. Published by Special Libraries, Pharmaceutical Section, Committee on Pharmacomedical Non-Serial Industrial Publications.
Lists the frequently helpful and usually free material issued by manufacturers, trade associations and foundations in pharmacy and related fields. (\$1.00 annually; order from Mrs. K. C. Owen, Winthrop-Stearns, Inc., 1450 Broadway, New York 18, N. Y.).
10. Fleming, T. P. *Guide to the literature of the medical sciences*. Preliminary ed. N. Y., Columbia University

School of Library Service, 1953. 131 p. \$4.00.
See particularly chapters on Biochemistry, p. 22-24, Pharmacology, p. 25-28, Microbiology, p. 29-33. Takes the place of the list by Brodman (No. 7 above); includes journals.

11. For the pharmacist's bookshelf; a well balanced basic library. *Journal of the American Pharmaceutical Assoc.*, Practical Pharmacy Edition, 7:68-69, Feb. 1946.
Primary list: 12 titles; supplemental list: 8 titles; other helpful books: 6 titles.
12. Gaddum, J. H. Pharmacological literature. In his *Pharmacology*, 4th ed. London, Oxford University Press, 1953, p. xiii-xvi. \$8.00.
Lists textbooks, experimental methods, chemistry of drugs, medical treatment, other literature. Moderately useful.
13. Hawkins, R. R., ed. *Scientific, medical, and technical books published in the United States, 1930-1945*. N. Y., R. R. Bowker, 1946. \$20.00
— — — Supplement One, 1945-1948. \$10.00
— — — Supplement Two. 1949-1952. \$10.00
Some 50 titles are listed under *Pharmacy*; but additional useful titles may be found under related headings. Complete table of contents plus thorough authoritative evaluation for almost every title listed.
14. Hawkins, R. R., comp. Technical books; an annual list. *Library Journal*, 15 May.
A useful annotated compilation of the year's significant books in pure and applied science.
15. Hocking, George M. Periodicals pertaining to pharmacognosy; a preliminary list. *Am.J.Ph.Ed.*, 7:217-233, April 1943.
A list of 500 journals, "primarily to facilitate the work of the literature searcher." Includes many more general and related fields.
16. — — — *Am.J.Ph.Ed.*, 7:234-242, April 1943.
A list of 242 items to be "of service in searching the literature."
17. Ireland, Edward A. Minimum list of books for a hospital pharmacy. *J.A.Ph.A.*, Practical Pharmacy Edition, 7:223-227, May 1946.
Contains a preliminary discussion; lists some 125 titles, including journals and house organs.
18. Kronick, David A. A selected list of house-organs for biomedical libraries. *Bulletin of the Medical Library Association*, 38:152-155, April 1950.
Incomplete, but helpful.

19. Lowe, Doris J. Information sources of use of the pharmaceutical librarian. *Special Libraries Association, Transactions, 41st Conference*, p. 151-153, 1950.
20. — A selected list of books for the pharmaceutical industry. *Special Libraries*, 45:87-92, February 1954. A classified list of some 150 titles, mostly of recent date. No annotations.
21. Maurice, Jewell. The development, criteria for selection, and uses of house organs. *Bull.Med.Lib.Assn.*, 40:341-347, Oct. 1952. A useful introduction.
22. Medical Library Association. Special Committee on a Medical Library Handbook. *A handbook of medical library practice*. Chicago, American Library Association, 1943. Out of print.
This title is a must for every pharmaceutical library. For our purpose here, we mention particularly B. B. Hallam's chapter *Periodical and book selection and ordering* and E. R. Cunningham's chapter *Reference work* which includes an annotated list of reference books arranged by type of publication. A new edition is now in preparation and should appear by late fall 1954. The two chapters named will be superseded by *Acquisition and preservation* by I. T. Anderson, by *Reference and bibliographic service* by E. R. Cunningham and M. E. Grinnell, and by *Bibliography of reference works in medicine and the allied sciences* by E. R. Cunningham, G. Annan, and M. E. Grinnell. This list will again be annotated, but it will have a subject arrangement to facilitate its use.
23. Oatfield, Harold. Literature of the chemical periphery. I. Cancer. II. Bacteriology. *Bulletin of the Medical Library Association*, 38:9-21, 156-165, January and April 1950.
Classified according to format; includes standard botanical reference works and "Antibiotics addendum."
24. Pottier, R. La bibliographie en pharmacie. *Technique pharmaceutique*, 1:i-xvii, January and February 1954.
This is a very useful list of international significance. Carefully annotated. The journal itself is published by the Société d'Editions Pharmaceutiques et Scientifiques, 11 rue Edouard-Jacques, Paris (14^e).
25. Schulze, Gertrude. Sources of information for the cosmetic industry. *Special Libraries Association, Transactions*, 41:154-162, 1950.
A classified list of 92 items including cosmetics and perfumery, dermatology, trade names and patents, and jurisprudence.

26. *Science.*
Annual book issue.
Contains authoritative critical reviews; all reviews signed.
Usually in April.

27. Sonnedecker, Glenn. A selected list of sources in English for teachers of history of pharmacy, with emphasis on related fields. *Am.J.Ph.Ed.*, 14:149-153, January 1950.
An annotated classified list.

28. Strieby, Irene, and Spencer, M. National and international pharmacopoeias: a checklist. *Bull.Med.Lib.Assn.*, 40:153-161, April 1952. Reprinted in *Bulletin of the American Society of Hospital Pharmacists*, 10:142-145, March-April 1953.

29. Stuhr, Ernst T. *Materia medica*, including pharmacology, pharmacognosy and toxicology; a select bibliography. *Am.J.Ph.Ed.*, 8:504-507, Oct. 1944.
Some 85 references.

30. Urdang, George. History, ethics and literature of pharmacy; a select bibliography. *Am.J.Ph.Ed.*, 8:491-503, Oct. 1944.
Some 215 references, in English, French, and German.
Less apt to become obsolete due to its subject.

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Pharmaceutical Education— A Vital Industrial Asset*

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In appearing before you today, as president of the American Foundation for Pharmaceutical Education, I wish to open this address with an expression of my personal and official thanks to Mr. James F. Hoge, and Mr. Charles S. Beardsley, for their highly constructive contributions to the progress of the Foundation. The fact that both Mr. Hoge and Mr. Beardsley occupy a place of eminence in the proprietary medicine field has given their work in behalf of the Foundation its own special significance. Indeed, their dedication to its aims and purposes have, in my opinion, reflected great credit upon the fundamental character of The Proprietary Association.

Mr. Hoge, as general counsel, has been invaluable to the progress and development of the Foundation's program. No task has been too difficult or too onerous for him graciously to accept, expertly handle, and direct.

Mr. Beardsley's dedication to the aims and purposes of the Foundation has been an inspiration to all of us privileged to work closely with him. He has a remarkable grasp of the scientific and research problems and needs of the drug industry, and he has labored long and hard to put the Foundation in a position to aid in meeting them.

Mr. Beardsley has served for a decade as a member of the Executive Committee of the Foundation's Board of Directors, and he held the office of president for three years—a fact which gives some indication of the high regard which the Foundation has for him.

Dr. J. Mark Hiebert and Mr. Alvin Brush merit special commendation as they have both well served the interests of the Foundation as members of the Board of Directors. Dr. Hiebert has accepted many specific assignments. Mr. Brush

*Presented at the annual meeting of The Proprietary Association of America, May 26, 1954, The Greenbrier, White Sulphur Springs, West Virginia.

is a member of the Finance Committee, and has rendered invaluable advice and guidance with respect to investments and conservation of Foundation Funds.

The recent election of E. T. T. Williams to the Board of Directors of the Foundation is worthy of special attention, because his profound knowledge of pharmaceutical matters, and his interest in every movement aimed at the betterment of pharmacy in all its parts made him especially fitted for a voice and a responsibility in the Foundation's affairs. The election of Mr. Smith Richardson to the Board of Directors, is indicative of his belief in the aims and purposes of the Foundation and of his willingness to cooperate toward their realization.

Dr. Frederick J. Cullen has for many years been an honorary member of the Foundation, and I am sure has watched its growth and development with both pleasure and satisfaction.

The drug industry in all its parts is dependent upon its professional, technical, and scientific personnel for the basic worth of its medicinal products, and preparations. The drug industry is a research-minded industry, and it spends well over \$100,000,000 annually upon its research staff, projects and facilities.

The industry, too, is a public health industry, and plays a major role in the treatment of disease and the conservation of health. To say that the industry requires the services of professional, technical and scientific personnel is merely to state that it recognizes its obligations, and responsibilities to the public interest, and thus seeks to attain that excellence of products and that high ethical plane which is reflective of its own lofty ideals and purposes.

Pharmaceutical education would seem the logical source of the professional, technical, and scientific personnel which the industry so urgently requires. Our system of pharmaceutical education is an integral part of the drug industry, and its main purpose is to prepare men and women for the practice of pharmacy, the operation of retail drug stores, and for

meeting the diversified needs of the pharmaceutical manufacturer.

The fact that The Proprietary Association is closely identified with pharmaceutical education, through its cooperation with the Foundation, is gratifying evidence of its stake in the training of pharmacists and in the basic soundness of our pharmaceutical educational institutions.

Proceeding on the assumption that there may be some individuals in the audience this morning who may not be familiar with the curriculum of modern pharmaceutical education, it might be well to list the subjects which play a major role in the training of pharmacists.

Practically every college of pharmacy gives courses of standard University grade in the following professional, technical, and scientific categories: Pharmacy, theoretical and applied, General Inorganic and Organic Chemistry, Pharmaceutical Chemistry, Physical Chemistry, Pharmacology, Pharmacognosy, Bacteriology, Prescription Practice and Dispensing, and Pharmaceutical Law and Jurisprudence.

The courses also include training in the development and marketing of drug products, and many other subjects pertaining to the practice of pharmacy and the diversified economic and distributional needs of the retail drug store. The mere reading of this list is sufficient to show the educational soundness of the pharmaceutical curriculum, while at the same time indicating the breadth and scope of the subjects which play so vital a part in the training of the modern pharmacist.

Many of our colleges of pharmacy have a model or practice drug store as a part of their educational facilities. These model pharmacies have on hand most of the products used in prescription practice, together with prescription accessories, first aid supplies, as well as the many other products and preparations which make up the medicinal and professional stock of the modern drug store.

These model drug stores are used for actual teaching purposes, and through them, the student is given a grasp of the services rendered by the retail drug store, the products carried, and its peculiar relationship to the neighborhood which it

serves. It should be pointed out that pharmaceutical educators today recognize that they have two fundamental purposes to serve. It is their duty to train the student in the professional, technical, and scientific subjects which form the bedrock of modern pharmacy. It is their obligation to make the student competent to enter upon the practice of pharmacy, and to serve the public in a professional capacity in all phases of pharmaceutical service.

Our educators also recognize that there is not much point in turning out men and women expertly qualified in purely pharmaceutical matters, if they are not trained in the economic and business practices essential to the operation of a successful drug store.

The pharmacy student is, therefore, trained in economics, marketing, advertising, and in many other subjects which modern merchandising requires. While it is true that business subjects have not been developed as fully as necessary in many colleges of pharmacy, it is true that these subjects are receiving more and more attention in every college of pharmacy in the United States.

Indeed, one of the requirements for accreditation of a college of pharmacy is that it must maintain a department of pharmacy administration which, as you know, is the academic designation for the courses commonly known as commercial pharmacy and business practices.

The pharmacy curriculum, which we have discussed here, covers four full academic years, and conforms in all respects to rigid university standards. It is because pharmaceutical education has attained its present level of efficiency and educational value that it has become a vital asset of the drug industry in all its parts.

Now a brief word with respect to the American Foundation for Pharmaceutical Education. The Foundation is now in its 13th year of operation and growth. This fact is important, because it indicates that the Foundation has just about completed its organizational and formative stage.

This does not mean that it has reached its full fruition, or that it has assumed a static existence. Indeed, it means

quite the opposite. A study of what the Foundation has done, and the tasks to which it is now dedicated would be sufficient to show that it has become of great credit and great value to the drug industry and to pharmacy as a whole.

It is to be borne in mind that the Foundation was conceived and established by the National Drug Trade Conference. This fact becomes of significance when it is recalled that the Conference is made up of those great national drug and pharmaceutical organizations which, in a composite sense, comprise the entire drug industry.

The Foundation must, therefore, be looked upon as an over-all drug industry project, not only in its basic undertakings, but also in its functional operations. Indeed, nothing can be more fundamental to the progress and growth of the drug industry and the pharmaceutical profession in general than the principles to which the Foundation adheres and the objectives which it seeks.

No one in this enlightened age needs to be informed with respect to the utterly indispensable role professional education plays in the complicated and highly diversified activities which the drug industry carries on. Indeed, pharmaceutical education is basic to the welfare of every segment of the drug industry and to every phase of pharmaceutical activity.

The manufacturer of prescription medication, the wholesaler, the retailer, the teacher, the research worker, the manufacturer of consumer medicines, all are dependent upon the proper utilization of those sciences and techniques which are the major concern of our system of professional education. And this, so it would seem, is tantamount to saying that the aims, purposes, and objectives of the Foundation are equally significant to the welfare of the drug industry and the pharmaceutical profession.

Impressive evidence that the Foundation is looked upon as an instrumentality of the drug industry is found in the support which the industry has given to it. This support has been exemplified in the financial contributions over the years, contributions which have, in large degree, enabled the Foundation to serve the purposes for which it was intended, and

particularly for discharging the obligations imposed upon it.

Undergraduate scholarships have been financed by the Foundation for a number of years, and these will undoubtedly be continued as long as the colleges so desire.

The graduate fellowships which today constitute a major activity of the Foundation were undertaken for the primary purpose of aiding more men and women to pursue their education through the Doctor of Philosophy level so that properly qualified persons would be available for meeting the needs of our colleges for professorial personnel while at the same time aiding the pharmaceutical industry to draw upon them in meeting their scientific and technical needs.

Graduate fellowships have been costly, and it is the profound regret of the Foundation that it has not been in a position to award fellowships to every qualified person applying for them. Even so, the graduate fellowship program has assumed formidable proportions, and now plays a major role in the thinking and planning of pharmaceutical education and in many segments of the drug industry.

To really appreciate the objectives and functions of the Foundation one must see it not only as an invaluable asset of the drug industry, and the pharmaceutical profession, but as a factor vital in their growth and welfare.

To the extent that our system of professional education is essential to the progress and permanency of the drug industry, and the pharmaceutical profession, to the same extent must the Foundation be looked upon as an instrumentality dedicated to these same ends.

The Foundation must be seen as a constructive undertaking, simply because the ends to which it is dedicated are so highly constructive in themselves. As long as pharmaceutical education is resorted to for meeting the fundamental needs of the over-all pharmaceutical field, to the same extent will the Foundation be called upon to perform tasks indispensable to the progress and development of these professional and industrial areas which are so dependent upon educated professional personnel.

Indeed, the Foundation should be evaluated in terms of its basic assets, and it should be utilized as an agency rendering an utterly indispensable service to the drug industry and the pharmaceutical profession.

We should look to the time when the Foundation will be a *foundation* in fact, and occupy a position of its own in the thinking and estimation of the drug industry and the pharmaceutical profession. Indeed, membership in the Foundation has become a badge of distinction, and those who contribute to its work, financially and otherwise, should come to the knowledge that in so doing, they are taking a constructive part in building an educational system devoted to the betterment of pharmacy in all its parts.

It is hoped that the members of the Foundation and those who make funds available for the furtherance of its plans and the realization of its objectives will take an active interest in its progress and achievements.

The Foundation is a moving force, not a passive institution, for the improvement of our system of professional education.

And, there would seem to be no limit to its usefulness and continued beneficial services, if it is assured the financial, moral and practical aid which its high purposes so strongly demand.

Let us always remember that the Foundation is a basic pharmacy asset, and should be utilized and developed as such.

Now, as a final word, I wish to express my sincere thanks and appreciation to Dr. W. Paul Briggs, the executive director of the Foundation, for his untiring devotion to the work of the Foundation and for the high degree of thoughtful attention which characterizes the performance of his duties. He is, in the truest use of the term, a basic asset of the Foundation, and it is to be hoped that he will be able to contribute to its progress and advancement for many, many years to come.

I wish to express, on behalf of the officers and directors of the Foundation, deepest thanks and gratitude to the far-sighted leaders in the industry who have put it in position

financially to carry on its work, as without the sustained interest and support, this work would have been an impossibility.

Again, our profound thanks to everyone who, in some way, has made the Foundation such an invaluable instrumentality for the betterment of pharmaceutical education and for the strengthening of our educational structure in all its parts.

It has been a privilege to discuss pharmaceutical education on the program of The Proprietary Association, as it provided an opportunity to rationalize pharmaceutical education in terms of the needs and requirements of the Association membership. The interest of The Proprietary Association in the American Foundation for Pharmaceutical Education has been of great value to its growth and development, and as president of the Foundation, I can assure you that its board of directors and officers join me not only in expressing our thanks to the membership of the Association, but in voicing the confidence that the Foundation will do its best to fulfill its obligations to pharmaceutical education, and thus serve the best interests of the pharmaceutical profession and the drug industry as a whole.

The Conference of Schools of Pharmacy--A Period of Frustration*

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Trustees of the early colleges that operated schools at Philadelphia and at New York saw in each other men of like mind and purpose, men to help and be helped. They had in common—as the secretary of the New York college said—“the same important ends, the advancement of pharmaceutic knowledge, and the improvement of those who may be preparing to commence the business of apothecaries.” In the 1830’s

*Presented to the American Institute of the History of Pharmacy in joint session with the Section on Historical Pharmacy of the American Pharmaceutical Association, at Salt Lake City, 1953.

apothecaries observed with interest the lively exchange of information and cooperation between the two Colleges, as reported in the *American Journal of Pharmacy*.¹

Later, other pioneer schools at Baltimore and Boston were included in the family circle, and the frequent correspondence among them² undoubtedly helped to soften the feeling of isolated struggle and build up a common store of ideas and aspirations. Moreover, graduates of the Philadelphia College often gained positions of leadership in other cities and felt the bond of a shared educational experience.

After 1852 the leadership groups broadened their intercourse through the annual meetings of the American Pharmaceutical Association. But in this formal Association, as in informal association, the main nexus was through the Colleges (i.e., local associations) rather than through the educational branches.³ Among the A.Ph. A. delegates educational efforts held an important place, however, for a number of professional problems were rooted in the lack of knowledge and competence among American dispensers of drugs.

At the conventions not much attention was paid to the several institutions that made some kind of beginning in pharmacy instruction but were not association schools. None of these institutions tried to register delegates in the American Pharmaceutical Association. Quite possibly they were not even represented at the meagerly attended meetings. In fact only one, the Medical College of Louisiana, offered pharmacy instruction before 1865. And it probably won some tolerance by requiring an apprenticeship with an apothecary.⁴ The others, as far as pharmacy is concerned, remained isolated and little-known, and either suspended operation or had few students until later in the century.

1 "Minutes of the College," *J. Phila. Coll. Pharm.*, 3:343, 1832; Curt P. Wimmer, *The College of Pharmacy of the City of New York*, 35.

2 S. M. Colcord, "The History of American Pharmacy," *Proc. Amer. Pharm. Assoc.*, 41:225, 1893.

3 The American Pharmaceutical Association never served as an association of schools, as half-assumed by those who overlook the 19th-century meaning of a College of Pharmacy. For example, see H. L. Kendall and C. O. Lee, "College of Pharmacy Associations, I," *Amer. J. Pharm. Edu.*, 8: 195-200, 1844, and the clarifying commentary by G. Urdang, "College of Pharmacy Associations," *Amer. J. Pharm. Edu.*, 8: 333-339, 1944.

4 In the 1890's a two-year apprenticeship was still required for graduation, but we cannot be certain about early requirements. (*Medical Department of the Tulane University, Catalogue for 1893-94, with Notice of the Course in Pharmacy*, 7).

How the Conference Started

When the vigorous, innovating University of Michigan opened a pharmacy curriculum in 1868, ignoring completely the traditional apprenticeship requirement, the reaction was quite different. It caused the greatest uneasiness, resentment, and eventually open hostility. Heretofore there had been no serious challenge from outside the circle of association schools, and comfortably harmonious relations within. Michigan offered a discomforting display of instruction superior in scope and facilities, simultaneously contradicting a basic tenet of association schools. The threat of change and challenge quite probably helped spark the impulse to form a special organization which would bolster the security and defend the ideals of "true" pharmaceutical education.

The call for organization of the Conference of the Schools of Pharmacy was issued from the Maryland College of Pharmacy, on April 21, 1870, as directed by the members at a College meeting. The purpose foreseen was "to consult and determine upon the best uniform course of study for those learning the profession of pharmacy, and to recommend the same for adoption in the Schools of the several Associations they represent, to the end that there may be a uniform standard of qualification for all graduating in pharmacy."⁵

It may not be entirely coincidental that the ground had been laid in Baltimore likewise for the first association of medical colleges just four years earlier. When the American Medical Association met in Baltimore in 1866, some members of the Maryland College of Pharmacy must have been interested observers of the action taken to "earnestly request the medical colleges of the country to hold a convention for thoroughly revising the whole system of medical instruction for the purpose of establishing more uniformity of time and a more systematic course of instruction for the whole."

Delegates from seventeen medical colleges met in Cincinnati the following year as the Medical Teachers Association. Several noble resolutions were passed with the hearty endorsement of the American Medical Association. But they

⁵ The full text of the circular sent out by the Maryland College appears under "Proposed Congress of Colleges of Pharmacy in Relation to Education," Amer. J. Pharm., 42: 281, 1870.

received meager support from college administrators. The Association became inactive after only the second meeting, but it got people to thinking about reform in medical education.⁶

Both the nature and the fate of this earliest associative attempt of the medical colleges found a remarkable parallel in the attempt of the pharmacy colleges a few years later. The organizational meeting was held at the hall of the Maryland College of Pharmacy in conjunction with the 1870 meeting of the American Pharmaceutical Association. President Sargent heralded the founding: "A Convention of the delegates from the various Colleges of Pharmacy has been called to meet simultaneously with our own," he said, "and I trust this Association will give its encouragement and indorsement to whatever wise measures may be inaugurated for the better education of students in Pharmacy and for the elevation of the standard of qualification necessary to graduation."⁷

Delegates attended from the Colleges of Maryland, New York, Chicago, California, Philadelphia and Massachusetts, and from the New Jersey Pharmaceutical Association.⁸

The minutes of this first meeting appear in the *American Journal of Pharmacy*, as well as summaries of most meetings thereafter. Fortunately, however, the official unpublished minutes of the subsequent meetings were preserved and have been deposited by the American Association of Colleges of Pharmacy in the Edward Kremers Archive of Historical Pharmacy at the University of Wisconsin. These minutes remained unpublished during the lifetime of the Conference as the result of repeated consideration and negative decision by members of the Conference.⁹

6 Frederick C. Waite, "The Medical Teachers Association of 1867," *J. Assoc. Amer. Med. Colleges*, 25: 202 f., 1950. The American Medical College Association (now Association of American Medical Colleges), founded in 1877, was considered a revival of the 1867 Association.

7 E. H. Sargent, President's Address, *Proc. Amer. Pharm. Assoc.*, 18: 37 f., 1870.

8 The latter organization had no school and never did take the initiative in founding one. But about this time the Association's president expressed the opinion that "the time will come when New Jersey should have a College of Pharmacy." (David L. Cowen, "Notes on Pharmaceutical Training in New Jersey before 1900," *Amer. J. Pharmaceu. Edu.*, 12: 302, 1948.)

9 See manuscript minutes in Edward Kremers Archive for Historical Pharmacy, University of Wisconsin. A "phonographic reporter" was engaged for at least some of the sessions, but this record is not known to have survived.

Representative Decisions, and Indecision

At the very first session of the "Conference of the Schools of Pharmacy"¹⁰ in 1870 delegates from the six colleges, and the New Jersey association, acted on a series of questions posed by a committee of the Maryland College of Pharmacy. William Procter, Jr. hastily amended a motion "That there be an educational standard established prior to the admission of any student to attendance on the lectures of Colleges of Pharmacy."

This first significant action illuminates key problems and limitations of both the Conference and the schools. First of all, Procter immediately recognized that it was not within the sphere of the Conference to act upon the establishment of an educational standard for admission to the schools. Instead, it was "the opinion of the Convention," which was to be "recommended to the Colleges," which in turn might "urge their members." This was a thoroughly democratic procedure, but one not likely to bring forth many innovations.

Attention shifted away from a standard for admission to the schools and toward the suggestion of greater care by pharmacists in the selection of apprentices. This basic idea, confirmed by the Conference, fundamentally affected all aspects of the association schools during the 19th century. For with primary responsibility for selection of future students resting with the preceptors, rather than with the educators, no effective standard of preliminary education proved possible.

At this first Conference the delegates also recommended that the apprentices be at least sixteen years old, and that a diploma not be granted before the age of twenty-one. They also recommended that a four-year apprenticeship be exacted in "a dispensing drugstore," thus specifically excluding service primarily rendered in the wholesale or manufacturing branches.

After much discussion, it was "Resolved, That the branches to be taught in Colleges of Pharmacy should at least include lectures on general chemistry, elementary botany,

¹⁰ "Schools" were defined in the constitution as incorporated teaching institutions requiring apprenticeship before graduation.

materia medica, and the general facts and principles of Pharmacy, and when practicable, opportunity should also be provided for instruction in practical and analytical chemistry."

Before adjournment the delegates took their stand on the Michigan course by stating that "diplomas should not be recognized as evidence of sufficient qualification, unless based on four years' practical service in a dispensing shop."¹¹

Of significance for understanding the role of the Conference is the closing resolution "that each College of Pharmacy should be requested to take action on the questions presented at this Convention, and report to this body at its next meeting." These delegates—teachers and pharmacists—knew now and would become more keenly aware that their actions could not bind the College trustees. Nor is it recorded that the trustees of the respective schools ever reported back their administrative decisions, to reinforce or modify Conference recommendations.

With charming and rather surprising frankness, J. P. Remington recognized, in later years and in another connection, the import of this locus of power: "The colleges themselves will simply have to decide," he said, "so long as they are governed by boards of trustees. These boards will do as they feel in which direction their needs are, and therefore the passage of a resolution of this kind will have no more effect than . . . opinion. . ."¹²

No new action of special significance to education arose from the second Conference in 1871;¹³ but the meeting of the American Pharmaceutical Association buzzed with excitement and talk of education. Professor A. B. Prescott of Michigan arrived and expected to participate in the proceedings!

When the session opened on September 12 the Association's members clearly saw that they faced an important issue. The general tenor of the early debate indicated that Prescott would be welcome as a member, but the University of Michigan just was not a "college of Pharmacy" and therefore not

¹¹ All actions quoted are from William Wright, Jr., Secretary pro tem, "Minutes of the Convention of Delegates from Colleges and Societies of Pharmacy, Held in Baltimore on the 14th and 15th of September, Relative to Pharmaceutical Education," Amer. J. Pharm., 42: 500-504, 1870.

¹² Section on Pharmaceutical Education and Legislation discussion, Proc. Amer. Pharm. Assoc., 40: 338 ff., 1892.

entitled to a delegate. Then discussion began to drift away from the question of what was meant in the by-laws by "colleges" that were entitled to delegates. A.Ph.A. members seemed to sense that the acceptance of Prescott embodied more than a technical point in the by-laws, indeed he symbolized a challenge to the correctness and adequacy of the educational system represented by organized pharmacists.

Finally, a special committee of the Association was appointed, consisting of one representative of each organization participating, to consider seating Prescott as a delegate. The next day found its members "united in the conclusion that the University is not, within the proper meaning of our Constitution and By-Laws, a College of Pharmacy: it being neither an organization controlled by pharmacists, nor an institution of learning which by its rules and requirements, insures to its graduates the proper practical training, to place them on a par with the graduates of the several colleges of pharmacy represented in this association."¹³

The following day Prescott delivered his classic address on "Pharmaceutical Education." It was forthright and fair. He decried emphasis on a pre-graduation apprenticeship that in a majority of instances had to be under a preceptor who knew little more science than his apprentice, a man "too often unconscious or regardless of his own deficiencies . . ." He championed the supreme value of a new school of thought: scientific courses with instruction centering about the laboratory, which precede—not follow—the "store" experience.¹⁴

Prescott's remarks were too true to be comfortably accepted. Colleges could not meet the standards he envisioned for a long time to come, even if they saw the need. Moreover, even if what Prescott said was true, that offered no reason for doubting the validity of revered institutions. The chill thought of change was profoundly disquieting.

In the Conference of Schools (i.e., the teaching colleges) delegates found that organizational bonds bringing them closer together offered not only the basis for coopera-

13 In this brief paper only representative actions can be mentioned that illustrate characteristics of the first cooperative endeavor of the schools.

14 The narration of this incident is based on Proc. Amer. Pharm. Assoc., 19: 29-34 and 47, 1871.

15 Proc. Amer. Pharm. Assoc., 19: 425-9, 1871.

tion but the opportunity for internal dissension. In 1873 every motion except one, after discussion, was laid on the table: on a code of ethics; on a certification of the apprentice's experience; on requiring preceptors, "as soon as practicable," to be graduates; on requiring an entrance examination; on requiring a four-year apprenticeship.¹⁶

The only significant action taken by the Conference this year was the protest against the granting of the Doctor of Pharmacy degree at the National College of Pharmacy, which represented little more than "common defense against unfair competition."¹⁷ A year later the Tennessee College of Pharmacy followed the policy of the National College in conferring a Doctor of Pharmacy upon graduates. In one of the few firm actions ever taken by the Conference, the constitution was then amended to restrict the membership to schools that conferred the "Graduate in Pharmacy" diploma.

In 1876 the Conference at first failed to convene for lack of quorum. Several delegates arrived later, since the Conference was held in conjunction with the conventions of the American Pharmaceutical Association, and the session opened with eight Colleges represented.

An extended discussion about introducing graded courses led to the conclusion that the time was not yet ripe. Even without graded courses it was the consensus that a "first course" examination should be recommended to the Colleges for trial. The delegates nervously shied away from any implication of trying to make it compulsory.

The Chicago College again raised the issue of requiring a preliminary examination of matriculants. It was re-interred with the comment that "the examination as to general education should take place when the apprentice is taken in the store."

The possibility and desirability of pharmaceutical laboratory work—previously relegated, hopefully, to the apprenticeship—now came within the purview of the schools. The Maryland delegate pointed with pride to the obligatory course

¹⁶ Since the Conference had enthusiastically recommended the four-year apprenticeship in 1870, it may be that interim discussions with trustees altered thinking on this point considerably.

¹⁷ Edward Kremers and George Urdang, *History of Pharmacy*, 310.

in analytical chemistry at his College. Professor Remington, whose school had a pharmaceutical laboratory, "dwelled upon the desirableness and even necessity of organizing such a practical course." Although such prospects were dim at many schools, a goal seemed set when delegates agreed that it was "advisable" to institute a laboratory "for practical instruction in chemistry and pharmacy."

In the minutes of the 8th Conference (1877) we find the first recognition of non-member institutions. In formulating a policy on transfer students, the delegates agreed that credit should be given for one year of lectures at "another recognized College of Pharmacy, or corresponding institution where the same branches are taught, there being no regular college of Pharmacy in the same locality."

At the 9th Conference only four Colleges were represented: Philadelphia, Massachusetts, New York and Louisville. That there could be no preliminary education required as a minimum standard was a decision that had stood the test of time. At the first, fourth, seventh, and now at the ninth annual meeting, the proposal was firmly rejected. The Conference did express the view that candidates for scholarships should have reached next to the highest grade of the public grammar school in their section of the country, or show similar attainment upon examination.

The time still was not ripe, the Conference decided, for either graded courses or required laboratory practice. This means, it will be noted, that representatives from some of the strongest association schools did not feel in a position, in 1878, to vote for offering different material in the second term of lectures than that given in the first term, or for any laboratory work that would be part of the regular course.

Although association schools were by no means ready to concede Prescott's contention that experience could follow graduation, the delegates did believe that "apprentices should attend their first course of lectures as early as possible."

By 1880 the practice by state boards of licensing graduates without examination had become an important issue. But divided opinion blocked any definite action. In 1877 the Conference had gone on record for requiring a thesis for

graduation, but opinion was now divided on this point also. Some delegates felt the requirement should be dropped, but emphasized that they could not speak for their trustees.

The 1882 Conference brought an extended discussion of analytical chemistry as an obligatory course, with Professor Remington championing the dominant view that the time was not ripe. Delegates voted 6 to 1 "to encourage the study in the regular course of lectures, but it is the sense of this Conference that the course in analytical chemistry should not be made compulsory. . . ."

The National College of Pharmacy, which had been excluded since 1874 because it conferred the Doctor of Pharmacy, now asked whether its delegates might be reinstated. The reply was that "no school had been excluded" and that all schools of pharmacy were welcome to participate—that is, "all schools granting the title of Graduate in Pharmacy. . . ."

There always seemed to be one or more delegates who insisted upon introducing the threadbare topic of preliminary education. The 14th Conference (1883) was no exception; the topic was discussed as it had been "each year since the conference had been held"—and with similar but not the same results. It was proposed that graduation from grammar school, or an equivalent examination, be required, and if "this motion be approved by all of the Colleges of Pharmacy that it go into effect on or before 1885." With this stipulation that the standard would have to be approved *unanimously* by all boards of trustees to be effective, the resolution was passed "with enthusiasm."

The question of whether or not the annual course should be extended from four to six months was finally laid on the table.

Perhaps more significant than any action, or lack of action, at this Conference in 1883, was a harbinger of changing attitudes: Prof. A. B. Prescott of Michigan was present by invitation, was asked to participate in the discussion, and was given a vote of thanks for his attendance.

As far as we know that was the last meeting of the Conference of the Schools of Pharmacy.¹⁸ The last yellowed page of the minutes book reports in the scrawl of an acting secretary that in 1884 only three college representatives carried credentials as delegates; no meeting could be held for lack of a quorum. Whether the proposal of 1883 to require grammar school graduation for matriculation proved to be the last straw for the boards of trustees, or whether the Conference just became quiescent from weary ineffectualness, we do not know.

A Post-Mortem Examination

What had been accomplished? The secretary of the American Pharmaceutical Association, John M. Maisch, a German immigrant who had become one of this country's master pharmacists and teachers, keenly felt frustration and failure.¹⁹

The editor of the German-American *Pharmaceutische Rundschau* heartily agreed with this dismal view. The Conference, he said, failed to realize its aim or be of any real use because of masterly inactivity. He claimed that "in recent years, at its annual meetings, the best elements of pharmaceutical talent and character have kept aloof from participation in its proceedings. . . . The Conference, unless recognized on a sounder basis, and unless its character and standing is raised by strictly eliminating incongruous and commercial elements, and the unjustified fear of losing matriculants or reducing their number, by requiring the future pharmacist to enter the portals of pharmacy and its education institutions with a fair knowledge of the common English branches, will continue to be rather a dead weight on the educational system of Pharmacy."²⁰

Frederick B. Power, first director of the pharmacy course at the University of Wisconsin, spoke disparagingly of the

18 It is noteworthy that the second association of medical colleges (American Medical College Association, f. 1877) became dormant just the year before the Conference of the Schools of Pharmacy disbanded. Its short existence seems to have been marked likewise by internal disagreements. (F. C. Waite, "Advent of the Graded Curriculum in American Medical Colleges," *J. Assoc. Amer. Med. Colls.*, 25:319, 1950.

19 John M. Maisch, "Die Conference der Fachschulen der 'Colleges of Pharmacy,'" *Pharmaceutische Rundschau*, 1: 182-3, 1883.

20 "Editoriell. State Boards of Pharmacy and College Education and Diplomas," *Pharmaceutische Rundschau*, 3: 70, 1885.

"questionable honor to be represented in the 'Conference of Teaching Colleges'."²¹

There seemed to be agreement, in this case, to speak ill of the dead or not at all. The results of the ill-fated Conference perhaps were as discouraging to the participants as to onlookers. The minutes seem to indicate, however, that Maisch's bitter disappointment with lack of results colored his judgment when he charged that "there was very little talked about that can be considered of any importance for pharmaceutical education." There was much of importance discussed; delegates saw the problems, grappled with them and failed to solve them.

It is difficult to believe that pharmaceutical education did not benefit eventually by the exchange of views and experiences during those hectic years. There were also discussions of textbooks, examination procedures, age requirements, and the like, which could not be mentioned in this brief analysis.²² Yet, the primary purpose had not been one of exchanging shop talk on teaching methods, but of arriving at common agreement on fundamental issues and raising standards. In this the Conference failed.

Urdang diagnoses an important handicap of the Conference as follows: "There was no definite educational requirement making systematic schooling a necessity for the pharmacist to be. For most of the colleges of pharmacy the necessity to use all means possible to attract students in order to keep up the mere existence of the school was stronger than a desire of some of the professors to elevate the general pharmaceutical standards and to agree upon unified requirements as to pre-requisites and curricula."²³

A correlate and a fundamental characteristic was the focus of power in the boards of trustees, who were tied to traditional forms and the majority opinion of preceptor-members. The delegates lacked authority to make decisions hav-

21 F. B. Power, "The Problems of Pharmacy in the United States," *Pharmaceutische Rundschau*, 3: 124, 1885.

22 The Conference is discussed somewhat more fully in the writer's "American Pharmaceutical Education Before 1900" (unpublished doctoral thesis, University of Wisconsin, 1952).

23 G. Urdang, "History of District No. 4 Boards and Colleges of Pharmacy," *Amer. J. Pharm. Edu.*, 11: 295, 1947.

ing even the appearance of effective policy. And if they had that authority there was no visible means for penalizing recalcitrant schools. A peculiarity of the Conference—throwing in doubt the resoluteness of the constituent Colleges—is the seeming lack of systematic procedure for reporting back to the Conference the vote or attitude of trustees concerning recommendations made, as a basis for further work and action. It seems safe to assume that ambitions for the Conference never went beyond that of a sounding board and advisory discussion-group. No willingness was expressed to modify in any significant way the patterns established by the pioneer schools; and the mechanism of the Conference, in effect, protected against unwelcome or inconvenient innovations. If we assume a moderate ossification of this kind, it may help explain why schools like New York and Philadelphia, which were no longer struggling for "mere existence," seem to have made no stronger bid for reform and higher standards during this period than other Conference participants.

The creation of a permanent, more vigorous, association awaited changing conditions that brought into being the American Conference of Pharmaceutical Faculties in 1900 (since 1925 called American Association of Colleges of Pharmacy).

Early Utah Materia Medica: Priddy Meeks*

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That the Utah settlers employed a *materia medica* that was largely botanical is a fact grounded in the nomadic history of the Mormons, who sought refuge from misunderstand-

*An apology is in order and an admission is made to reporting the great bulk of this paper from only one source, *The Journal of Priddy Meeks*. As the subject was developed, it became increasingly apparent that an account of Priddy Meeks' drugs and medical practices was certainly pertinent enough to be treated separately from the more scattered, less detailed material on Early Utah *Materia Medica*. (G.E.O.) This manuscript was presented under the auspices of the American Institute of the History of Pharmacy at the 1953 meeting in Salt Lake City.

ing and persecution almost from the day of the founding of their faith. The Saints, in the movement westward from New York, came into contact with many strongholds of botanical medicine, flourishing in the East and Midwest at that time, and seized upon this interpretation of medical practice as one well adapted to their teachings and to their enforced way of living. Because of the conditions in traditional medicine in the first quarter of the nineteenth century, the Mormons had been warned by their leaders against seeking the services of calomel-dependent, blood-letting physicians. The medicine of the electics was an answer to their needs; it coincided with the teachings of the *Word of Wisdom*; and it served in good stead during the unsettled years and the period of colonizing Utah and Mormon country.

The herbs that were used were for the most part indigenous to the areas over which the emigrations moved. Being available, they were cheap. Their use was not complex. Their number was small. Medicinal poisons were avoided; the armamentarium was limited to innocuous drugs that were safe in the hands of semi-trained personnel who might find themselves suddenly responsible for the health of a number of fellow settlers, or in those of untrained heads of households. During the second winter in the Salt Lake Valley, several doctors established what was called the Council of Health, which met weekly for the purpose of disseminating to the mass of people information on medicating themselves in order to lessen the doctors' burden.

A few members of the church "studied" to become doctors—many of them became adherents to the Thomsonian doctrines. One such person, whose journal has been thoughtfully preserved and (fortunately) published was Priddy Meeks. Dated October 22, 1879,* his journal is a "record of Priddy Meeks and his family, progenitors, and posterity, up to this date made from items of record and memory of P. Meeks and wife Sarah M. Meeks and their children."

Dr. Meeks was born August 29, 1795, in the Greenville District, South Carolina. His father, Athel Meeks,

*Some "chips" were appended at later dates.

"... being inclined to new countries, left South Carolina and moved to Kentucky . . . I was then about two or three years old. He had a great range to hunt in, not knowing the distance to any inhabitants West. He lived there twelve years, then moved to Indiana, four years after the country was surveyed by the Government. He passed inhabitants ten miles before he located . . . There in the month of April, 1812, the Indians killed him; shot him in his open door . . ."²

The rest of the family escaped and moved down to French Island settlement on the Ohio River. At the age of twenty, Priddy Meeks was married to Mary (also referred to as Polly) Bartlett, who bore him four children. She died in Spencer County, Indiana, and for three years he "lived single," then married Sarah Mahurin Smith, a widow with one child and a "splendid" stepmother. They had five children.

When Priddy and Sarah moved from Indiana to Illinois is a forgotten date. They settled first on Embarrass River about half way between Vincennes and Vandalia; later they moved on to the Illinois River;

" . . . five or six miles above Meredocia, a town on the river, a sicklier place I never want to see. . .

"Here when the sickly season of the year came on I visited many of the sick and was very successful in relieving them with roots and herbs, so much so that the community insisted I should quit work and go to doctoring. Such an idea had never entered my mind. I said to them that I knew nothing about doctoring; they said 'You beat all the doctors.'"³

Among the sick was Sarah Meeks. Her case was so "complicated" that no one seemed to know quite what to do, least of all the doctors who "had exhausted their skill without benefit." About this time Meeks met a former friend who had become a Thomsonian doctor. He recommended an investment in Thomson's *New Guide to Health*, which was made only after an argument with Sarah about possible better uses of the money.

" . . . and just two weeks to the day from the day I got the books I put out into the woods to collect the medicine and by following the directions of the books I made a sound woman of her. This gave such an impetus to the anxiety of the people about my success that it seemed like going against wind and tide to withstand their influence, for me to go into doctoring. And from that time henceforth my labors began with the sick."⁴

Thereafter, the reputation of Doctor Meeks, who now lived in Versailles, Brown County, Illinois, grew until he gathered his family to Nauvoo in April, 1842, two years after they had all become members of the Church of Jesus Christ of Latter Day Saints.

The marriage of Priddy and Sarah Meeks remained a monogamous one through the later trials of Nauvoo, the great pilgrimage to the Salt Lake Valley (where they arrived in October, 1847), and the colonization in Parowan, Iron County, Utah. In 1856, at the age of 61, however, the doctor entered into a polygamous marriage (at his wife Sarah's insistence) with Mary Jane McCleave, then 17, by whom he had ten children. With his two families he participated in the settlement of Harrisburg and Orderville, Utah, acting as a physician but devoting most of his time necessarily to husbandry.

The journal does not record whether Priddy Meeks ever held rights to a Thomsonian patent; he availed himself of Samuel Thomson's teachings through the purchase of his *New Guide to Health*. He did not hesitate to identify himself as a follower of Thomson, however, and he applied the Thomsonian name to his courses in therapy.

"We need to know but little about the patients, only to know that they are sick; and but very little difference what the complaint will be, thorough courses of regular Thomsonian medicine will seldom if ever disappoint you in performing a cure. It will remove obstructions wherever found in the whole system and restore a healthy action wherever needed. It does act like intelligence, always in harmony with the living intention of the system which is always to remove obstructions from the system of whatever name or nature it may be."⁶

In his journal, under an entry dated July 13, 1882, he catalogues his roots and herbs under appropriate heads, emphasizing at the same time that they all possessed more properties than the one under which they were listed:⁶

STIMULANTS	EMMENAGOGUES	DIURETICS
lobelia	pennyroyil	sumach leaves
black pepper	tansy	elder bark
cayenne pepper	queen of the meadow	parsley root
ginger	silkweek root	dandelion
horseradish	asafoetida	horseradish
cinnamon	catnip	milkweed root
catnip	hoarhound	pumpkin seeds
hoarhound	blue cohosh	juniper berries
tea	black cohosh	spearmint
coffee	Indian root	queen of the meadow
ASTRINGENTS	BITTERS	hoarhound
barberry bark	golden seal	mullein
sumach	mountain grape	watermelon seeds
raspberry	balmony	sweet pink, top and
cranesbill	columbo root	root
red dock root	bitter root	button snake root
tan bark	barberry bark	Virginia snake root
swamp dogwood	hops	
larb, or urva usa	gum myrrh	
cinquefoil	quaking asp	
chokecherry	tansy	

For canker medicine he used green sumac leaves, frequently gathered on his way to and from visits to the sick. Although it was omitted from his catalogue, one of his best antiseptics was elm bark taken off any nearby tree.

One of the worst cases of inflammatory rheumatism that Dr. Meeks ever saw was cured by taking a little chew of Indian root and half that amount of yellow dock three times a day, swallowing them down every time. Mary Smith, a young girl had a "bunch" growing on her upper lip close to her nose, and protruding over the nostril so that she could not breathe through it. All she took was equal quantities of burdock, yellow dock and dandelion in powders, and a snuff of yellow dock for her nose; the tumor gradually vanished and left her a smooth face.

A man with his back half bent could not straighten up. His kidneys and urinary organs were all affected, so that he could not walk a step. He was treated with nothing but burdock seeds and dandelion tea, and in twelve days he was well enough to go home rejoicing. Another man suffering from a severe case of kidney complaint had been given up by his

family physician; however, under Dr. Meek's treatment of nothing but burdock and dandelion the patient soon recovered.

The greatest herb in the repertory was lobelia, used in powder form, as the infusion or the tincture of the leaves, pods, or seeds, either alone or compounded with other drugs. It was best gathered in the fall when the leaves began to turn yellow; at that season the seeds were ripe and advantage could be taken of the entire plant. In several places in his writing, Dr. Meeks gives over entire paragraphs to eulogizing lobelia as a "glorious medicine!" He accounts for its action thus:

"Lobelia performs all of its cures by destroying the poisons in the system, caused by the vitiated and acrimonious fluids of the system that causes so much ill health. When the obstruction is found in the system, it concentrates its power and influence on that spot, and will diffuse itself through the whole system till it finds that spot, and overcomes the complaint by relaxing the parts, and scattering the pain and misery, causing it to escape with perspiration and neutralizing the poison in the blood, while that portion of the poison that might escape through the pores of the skin should be met with the tincture of lobelia outwardly as a wash . . ."

One limitation was recognized: "It will not act upon a dying person."

Being the favorite, lobelia found many uses. It was administered in the practice of midwifery to relax the system "to the flexibility of a wet cloth, which can be done if persevered in sufficiently without danger whatever."⁸

An incident related by him:

". . . while I was cutting up the lap of a large oak tree, together with a man named Jackson . . . he suddenly took a very high fever; it was a very serious case and he was very much alarmed about it. I told him that there was a little weed growing around I thought might do him some good. He eagerly wished for it. It was lobelia of the first year's growth. Some not much larger than a dollar and lay flat on the ground. I got some of it and told him to eat it, just like a cow would eat grass and he did so, and in a few minutes it vomited from him powerfully and broke the fever and he finished his day's work."⁹

Another case involved a man who ate too many wild grapes; they proved so costive that he had no passage for nine days. The doctors gave up the case, but Dr. Meeks

" . . . treated him with lobelia in the form of regular courses of medicine and brought grape seeds from him both up and down until he was empty and soon well."¹⁰

Second only to lobelia, and supposed always to accompany it, was cayenne pepper, praised by Priddy Meeks as the purest and best stimulant in the compass of medicine. Its action was based presumably upon the increase of the very life and vitality of the system by giving the blood a greater velocity and power. When the system was relaxed with lobelia and the blood was stimulated with cayenne pepper, the combination acted on the whole system like an increased flow of water turned into a muddy spring—it would soon run clear. The healing power of nature was thought to be in the blood and to accelerate the blood was to accelerate the healing power of nature; that cayenne pepper would bring about this acceleration Dr. Meeks was convinced. He supported his thesis with this case:

"There was a teamster by the name of James McCann . . . reached Parowan with both feet frozen above his ankles. He was left with me to have both feet amputated . . . I was at my wits end to know what to do. I saw no possible chance for amputation. An impulse seemed to strike my mind as though by inspiration that I would give him cayenne pepper inwardly and see what effect that would have on the frozen feet.

"I commenced by giving him rather small doses at first, about three times a day. It increased the warmth and power of action in the blood to such a degree that it gave him such pain and misery in his legs that he could not bear it. He lay down on his back and elevated his feet up against the wall for three or four days and then he could sit up in a chair. The frozen flesh would rot and rope down from his foot when it would be on his knee, clear down to the floor, just like buckwheat batter, and the new flesh would form as fast as the dead flesh would get out of the way. In fact, the new flesh would seem to crowd the dead flesh out of the way . . .

"That was all the medical treatment he had and to my astonishment and to everyone else that knew of the circumstances, the sixteenth day after I gave him the first dose of pepper he walked nine miles, or from Parowan to Red Creek and back, and said that he could have walked as far again. He lost but five toe nails all told."¹¹

Along with his catalogue of herb simples, the directions quoted here are given:¹²

White Oil Linament:

Take equal quantities of sweet oil and spirits of turpentine and salt petre, a tablespoon each, and one hen egg. Put it into 1 pint of best vinegar, shake it well together several times. Good for rheumatism, swellings of all kinds, sprains, aches, and pains of any kind whatever.

Stone in the Bladder:

Take the size of a pea concentrated lye; put it in a teacup of water; when the scum rises, skim it off, pour the balance into a bottle with a glass stopper to it, except the dregs; throw that away. A half teaspoonful is a dose to dissolve the stone in the bladder; taken several times a day (communicated to me).

Under the heading Dr. Thompson's Receipts.—(Composition Powders), these additional notes and formulas, also quoted, were transmitted:¹³

2 lbs. bayberry bark; 1 lb. ginger; 1 lb. hemlock bark; 2 ounces of cayenne; 2 ounces cloves. Finely powdered and well mixed.

Take one gallon of the best alcohol; 1 lb. gum myrrh; 1 ounce of cayenne; bottle it up and shake it every day for ten days.

For canker in the throat: Burned copperas put in soft grease and rub it in behind the turn of the jaws and behind the ears and throat and top of the head several times.

It is said that the root of the blue flag is a sovereign remedy for the **tooth ache**; that the pain ceases the instant it is chawed.

Good strong vinegar and soot or eggshells will do to cure the **yellow jaundice** in most cases.

To relax any contraction of the system whatever: Take equal quantities of yellow dock, dandelion, burdock, and lobelia, all finely pulverized, and put at the rate of 8 ounces to one quart of the best alcohol. Let it stand ten days. Shake it frequently. Use as a wash, always rubbing it downward with the hands.

To cure swelled joints: Take two hen eggs beat fine. Put in one tablespoonful each of table salt and black pepper in one pint of good vinegar. Mix it well together. Anoint with it, rubbing downward with the hand several times a day.

Thomsonianism had its day and ran its course. With the influx of physicians into the territory, many of them trained in the reputable medical schools of the East, and with the return of Utah-bred citizens—men and women—to those Eastern schools for the purpose of studying medicine, the botanical practices fell into disrepute. As a matter of note, in the January 22, 1863, edition of the *Deseret News*, Elder Woodruff, Chairman of the Board of Examination of Physicians, stated among other things,

"We have been imposed upon by pretensions of all species of quacks, Allopathic, Homeopathic, Old School, New School, Electro-biological, Astrological, Hydropathic, Thomsonian, semi-Thomsonian, and simmered down Botanic."

Priddy Meeks died on October 17, 1886, at the age of 92. His wife, Sarah, died in her 99th year, and his wife, Mary Jane, died in her 93rd year. As J. Cecil Alter, editor of the *Utah Historical Quarterly* in which the journal was published, noted,

"It would seem that Dr. Meeks' views on living and his theories and practice of medicine were not unfavorable to longevity."¹

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The quotations are all included in the "Journal of Priddy Meeks", published in the *Utah Historical Quarterly*, Vol. 10, No. 4, 1942.

The page references are as noted:

(1) p. 145	(6) p. 217	(11) p. 207
(2) p. 146	(7) p. 215	(12) p. 217
(3) p. 149	(8) p. 219	(13) pp. 217-8
(4) p. 150	(9) p. 197	(14) p. 223
(5) p. 175	(10) p. 198	

The History of Professional Pharmaceutical Fraternities for Women*

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Organized secrecy has been observed to be a feature of many civilizations. Fraternalism and its notions have penetrated almost every segment of American society to such an extent that it represents "one of the major patterns of American civilization."¹ Fraternalism penetrated into American colleges and universities on December 5, 1776, when the first secret Greek letter society, Phi Beta Kappa, was founded at William and Mary College, Williamsburg, Virginia.²

*Presented under the auspices of the American Institute of the History of Pharmacy at the 1953 meeting in Salt Lake City.

The fraternity system for women students grew as the opportunities for collegiate training for women were increased. Records show that it was not until 1851 that the first secret society for women, the Adelphean, was founded at Wesleyan College in Macon, Georgia.³ As women became more interested in higher education professional fraternities for women were founded. The first professional fraternity for women, Alpha Epsilon Iota was organized by a group of women medical students at the University of Michigan in 1890.² It was during World War I, that the professional fraternity movement reached the women students in the schools and colleges of pharmacy. The year 1917 might well be regarded as the year that the national professional fraternity movement for women pharmacy students was begun. That the women pharmacy students of Purdue University desired an organization of this type was made known to Dr. C. B. Jordan, Dean of the Pharmacy School. At the 1917 meeting of the American Pharmaceutical Association he conveyed the desire of the women students to the members of the Women's Section, telling them that it seemed to him "that the Women's Section of the American Pharmaceutical Association would be the proper organization to mother such a movement."⁴ The executive committee of the section was asked to study the problem and submit their report at the 1918 meeting. At the 1917 meeting of the American Conference of Pharmaceutical Faculties (now known as the American Association of Colleges of Pharmacy) the Committee on Activities of Students and Alumni was created with Dr. Rufus Lyman as chairman.⁵ Their report to the 1918 meeting of the American Conference of Pharmaceutical Faculties indicates the situation at that time. "The Committee in the last year has found the need for such [a pharmaceutical fraternity for women] and in a number of schools local chapters have been formed in which we believe we have nuclei for a future sorority system."⁶ It was during the 1917-1918 academic year that one of these local chapters, Lambda Kappa Sigma, began to make plans to expand their activities on a national level.

In October, 1913, Miss Ethel Heath, the librarian of the Massachusetts College of Pharmacy organized a club to pro-

vide enjoyment for those girls who wished to join. Lambda Kappa was selected as the name for this organization whose principal activity at that time was the serving of hot lunches in the Girls' Study twice a week. About two years later Sigma was added to their name. During the 1917-1918 academic year, the constitution was revised to provide for the selection of members and the society became a secret fraternity.⁷ In 1918, three chapters were chartered, at the Albany College of Pharmacy, the University of Illinois, and the University of Pittsburgh. By 1919 the ideals and purposes of Lambda Sigma had traveled across the entire width of the United States and Zeta chapter was chartered at the University of California. Their program of expansion has continued. Today there are twenty-nine active chapters and thirteen graduate chapters.⁸

The Committee on Activities of Students and Alumni in their report to the 1918 meeting of the American Conference of Pharmaceutical Faculties recommended "that the Committee be instructed to proceed at once to the organization of a pharmaceutical sorority in conference schools." Miss Zada M. Cooper, a member of the committee was also chairman of the Women's Section of the American Pharmaceutical Association. At the 1918 meeting of the Women's Section she reported the findings and recommendation of the Committee on Activities of Students and Alumni, which was endorsed by the Women's Section.⁹ At this time the United States was suffering from the war-time restrictions and the great influenza epidemic. College campuses didn't return to normal until 1920 and then the real work of organizing the sorority was begun. Miss Cooper "made a real attempt to see if all the clubs and local sororities could not be brought into one national sorority. This was impossible since some of them had made considerable progress and too many concessions had to be made."¹⁰ There were three local groups who were interested and on May 13, 1921, representatives of these groups from the University of Minnesota, University of Nebraska and the University of Iowa, met in the Hall of Pharmacy and Chemistry at the University of Iowa to formally organize the new women's fraternity, Kappa Epsilon. The three local

clubs became Alpha, Beta and Gamma chapters of Kappa Epsilon. One of the objectives of Kappa Epsilon was "to stimulate in its members a desire for high scholarship." Outstanding scholarship is recognized, both on an individual basis as well as on a chapter basis. Kappa Epsilon continued to expand, however chapters were chartered only in those schools or colleges that were members in good standing of the American Association of Colleges of Pharmacy. Today there are seventeen active chapters and thirteen alumnae chapters.¹¹

Today, Lambda Kappa Sigma and Kappa Epsilon, both members of the Professional Panhellenic Association, are chartered in forty-eight schools of pharmacy with a combined membership of 3,719.¹²

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Practical Applications of Visual Aids in Pharmacy Teaching

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This paper is not intended to be a defense of the educational value of visual aids in pharmaceutical education. We have tested their application in class room situations and firmly believe that their value has been amply demonstrated. We are aware of the excellent progress exhibited by the Visual Aids Committee of the AACP but are at a loss to understand the long delay in developing an energetic, concrete program for eliciting the cooperation of the member colleges.

Having accepted the thesis that visual aids offer material aid in achieving the objectives of pharmaceutical education, we decided, several years ago, to embark on a program of producing this type of material for our own use. It is the purpose of this paper to describe this program, list its accomplishments, and present some of the results for your consideration.

In 1946, the college began a modest experiment with 8 mm. movies designed to illustrate whether such material was feasible for an average school, operating on a limited budget. This work was done by an instructor, in the Dispensing Pharmacy Laboratory. At the conclusion of these experiments, we felt the results (not utilized, today) warranted further expansion of our program.

In 1948, the college initiated a project for the preparation of 2 x 2 Kodachrome slides of pharmaceutical apparatus for use in lectures on Introductory Pharmacy. The work was done by a senior student, as a term project, under the guidance of a faculty member, and exhibited considerable promise for this medium.

*Presented before the Section of Teachers of Pharmacy, AACP, August, 1953, at Salt Lake City.

In 1948, the junior author of this paper came to the college. He had been actively engaged in amateur photography for a number of years and became interested in these visual aids projects.

In conversations, the chairman of the department outlined his thoughts for the development of the projects which involved the production of 16 mm. motion pictures, 2 x 2 Kodachrome slides and 3 1/4 x 4 black and white slides. These were to illustrate basic pharmaceutical techniques, apparatus, etc. Photostats of original prescriptions, photomicrographs, and illustrations, were added to this list.

During the next year, the junior author and two senior students experimented with the production of a film on the simple technique of filling a collapsible tube. Dean Schaefer, who has been consistently helpful, lent his camera and the film was supplied by the college. When the film was completed, it was favorably received by the Department and the Administration. As a result of this experiment, an annual budget was allocated which did much to encourage the projected program.

The program has now been in effect for about five years and has resulted in our acquisition of a considerable amount of equipment and the production of a sizable amount of visual aid materials. In addition, one of the more valuable outcomes, to our mind, has been the enthusiastic whole-hearted cooperation of students and faculty members.

Our accomplishments to date are:

Motion pictures:

How to fill a Collapsible Tube

Manufacture of Pills

Hand Manufacture of Suppositories

Machine and Fusion Manufacture of Suppositories

(These four films have been duplicated. We have two extra copies of each and they are available to any school upon request without charge)

Manufacture of Tablet Triturates

Preparation of Bulk and Divided Powders

Filling Hard Capsules

Techniques of Weighing and Measuring

Extemporaneous Preparation of Emulsions

(We hope to have copies available of these in the near future)

2 x 2 Kodachromes

Pharmaceutical apparatus and set-ups—about 100

Pharmaceutical Specialties—about 200

Standard 3 1/4 x 4 (black and white) slides

Photomicrographs of emulsions, ointments and lotion vehicles—
about 30

Photostatic Positives

Original physicians prescriptions—sets of 50 each of about 200

Photographs

A considerable number of the laboratories, the model pharmacy, etc.

In this interval we have acquired much additional equipment over what was already available as part of the Camera Club of the college. A partial list includes:

Enlarger
Kine Exakta Camera with accessories
Tripod
A variety of lights
Projectors of various kinds
Darkroom equipment
Editing and Titling devices, etc.

The annual budget for this work, including film, equipments and sundries has run between \$250 and \$300. We have been fortunate to obtain some additional funds from some of the organizations affiliated with the college. i.e. the Kings County Pharmaceutical Society supplied funds for the duplication of films and mailing cases. The student branch of the A.Ph.A. donated funds toward the purchase of the Exakta camera. The Alumni Association is being solicited for a contribution for the purchase of a better motion picture camera.

We have used these visual aid materials in lecture, class room discussion groups and laboratory briefing. They have been enthusiastically received by the students and the staff is unanimous in the belief that there is a definitely discernible improvement in teaching efficiency.

We would urge other colleges to embark on such a program because we feel that the expenditure is modest, the skills are available among the staffs and student bodies and the opportunities for the application of visual aids in pharmaceutical education are myriad. A system of free interchange of such materials by the colleges and cooperative efforts will be of benefit to all.

A word about "sound" films. We had projected the production of synchronized tape recordings with our films. However, experimentation with various sound films available from pharmaceutical houses convinced our staff members that such formalized, "canned" sound effects frequently did not obtain as valuable student reaction as we obtained if the instructor showing the film made occasional pertinent comments during the showing of a titled, silent film. A remark such as, "Watch this next sequence closely, the procedure is vital to success of the operation," or a brief explanatory statement seemingly gives better results, possibly because of the fact that a continuous sound lulls the student into lack of concentration while a remark from the instructor present rivets attention to crucial sequences.

In conclusion, we should like to offer the use, or loan, of our film duplicates to any requesting them and assure you our staff will be most happy to cooperate if you wish to initiate such a program.

An Experiment in Teaching Pharmaceutical Preparations*

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The course in pharmaceutical preparations which I have known as a student and a teacher is unsatisfactory. The lectures I have heard and those I have given have consisted chiefly of descriptions of the properties and methods of preparation of official products. This is not entirely wrong, since the course is defined as the study of official preparations. It disturbs me, though, to realize that the students could obtain most of my lecture material without any help from me, merely by reading their assignments. In the laboratory, the major activity is the preparation of official products. This, too, is reasonable; one can gain much from a course like this. For

*Read before the Section of Teachers of Pharmacy at the 1953 meeting in Salt Lake City.

instance, the student learns of the necessity for uniformity in medicinal products. At the same time he becomes familiar with elegant model products which embody the solution of difficult formulation problems. In such a course, too, the teacher can efficiently impart the traditional arts and skills of pharmacy.

The trouble is that all these good features, and the others which come to mind, are not enough. In a course which is limited to the description and preparation of official products, pharmacy is taught as a craft; whereas in my opinion, it should be taught as an applied science. The training pharmacy students receive should enable them to become creative workers in a dynamic field. I feel that the essential goals of the pharmaceutical preparations course should be first, to emphasize general principles, and second, to teach the students how to apply these principles to the solution of practical formulation problems.

Consideration of these objectives has led me to start a complete revision of the course I teach. This revision has just begun, and it still has a long way to go, but I think it has proceeded far enough to justify this preliminary report.

What I have done so far is to make some changes in the laboratory instruction. These changes are not revolutionary. The students are still assigned official formulas to prepare; actually they spend most of their time making official preparations. I have reduced the number of these preparations, however, in order to make way for special experiments. I have relied on these experiments to achieve the change of emphasis I am seeking.

The principles which have guided me in the construction of the experiments are freedom of choice and cooperation. The students are assigned projects in which they are expected to divide the work and share all data. The experiments are designed to permit the exercise of initiative and ingenuity in the solving of formulation problems. I try to convince the students that they need not be dependent on fixed formulas and specific directions—that with experience and knowledge of basic principles and of the properties of pharmaceutical raw materials they will be able to prepare any formula, pro-

vided that they couple their knowledge and experience with the use of scientific methods.

The experiments vary in their scope and in the extent to which the guiding principles are applied. I will describe three of the more elaborate projects to illustrate what I mean.

First, the emulsion experiment. In order to cover all the material, the class is divided into groups of five students—the laboratory bench serves a convenient basis for group selection. Each person prepares at least six emulsions, using a variety of specified oils and emulsifying agents. The selection of particular combinations within the required list is left to the individual. The group as a whole, however, is expected to prepare the entire list of products. Optional experiments are included for those who wish to do additional work. The topics included in the project are:

1. Techniques of preparing emulsions. For particular formulas the continental or English methods, or homogenization, are specified.
2. Influence of the type of oil on emulsion stability. Each group prepares emulsions (using a single formula and technique) from five oils.
3. Influence of the emulsifying agent on emulsion stability. The group uses a total of seven emulsifying agents.
4. The use of preservatives. The students make up their own stock solutions of methyl and propyl parabens.
5. Principles of flavoring and coloring. An ample selection of flavors, both natural and artificial, and of certified food colors, is provided. The students are given general directions regarding techniques and quantities, and are then allowed a free choice of color and flavor combinations.

The students are encouraged to share their experiences outside the group as well as within it. The products of the entire class are left on display for several days so that all may observe creaming rates and share the data on their color and flavor experiments. So far I have not required formal reports on this experiment. I am more interested in the general impressions the students obtain than in specific data. I feel that the spontaneous atmosphere of such an experiment is valuable. The more interested students spend considerable time poring over the samples anyway; some even make measurements of the rates of creaming and take copious notes. Many students, of course, hand in their preparations and for-

get them. I doubt whether any compulsions to record data would compel students to learn more than they want to.

I feel that the learning experiences provided by the emulsion experiment extend beyond the mastery of particular techniques and formulas. The student is exposed to ideas which he would seldom encounter in more individualized experiments. When he compares a relatively large number of similar preparations made under systematically varied conditions, he has an opportunity to generalize, and thus gain insight into the broader aspects of the design of dosage forms. With a class which is working as a set of teams there is a cross-fertilization of ideas which is stimulating.

In the experiment on troches, which is the second one I wish to describe, the emphasis is quite different. The class is not divided into smaller groups. Only one formula is given; it is offered as a challenge. The limitations of the formula, which is taken from a standard dispensing text, are described, and the class is asked to develop several alternative formulas, or make changes in the technique, and achieve an improved product. Suggestions are offered on how to proceed, but only in the most general terms; from there on the student is on his own. He may choose at will from the variety of substances available. As in the emulsion experiment, colors and flavors are provided. Also, as before, cooperation in the development of formulas is encouraged.

In the cosmetics experiment I return to a detailed description of a set of formulas. So far as possible, the formulas selected represent prototypes. For example, a classical vanishing cream formula is given. For each of these basic formulas numerous suggestions are offered for changes which may be made in order to modify one or more properties or to convert to a product with an entirely different function. Examples of such suggestions are directions for converting the traditional vanishing cream to a foundation cream, a shaving cream, or a deodorant cream. In this experiment the assignments are made as flexible as possible. The students are required to make only a minimum number of preparations within each class; beyond that they are free to follow their own interests.

They need not make any formula in the syllabus if they choose to use their own sources of information.

These three projects make up the core of the teaching experiment which I am conducting. They do not stand alone, however. Throughout the course I have added numerous experiments of lesser scope, and of a more conventional type. These experiments have limited objectives—the modification of particular formulas, or the investigation of restricted areas of techniques or properties. Examples are: (1) Influence of technique on the accuracy of capsule compounding, (2) Evaluation of various DISPENSING agents in the preparation of aromatic waters, and (3) Alternative absorption bases for neocalamine ointment. In these experiments, as in the others, an informal approach is maintained. The majority of the experiments are optional. Cooperation in the collection of the data is encouraged.

I have made one more major change in the laboratory. The students are encouraged to undertake individual term projects. This may seem to be an undue burden to add to an already crowded course. The mitigating condition is that my definition of a term project is very liberal. The students are permitted to choose their own projects without restriction except for unavoidable limitations of equipment or materials. No one is required to bring his research to completion. The quantitative yield of data is of no importance. My sole objective is to teach the fundamentals of scientific research, and if the student masters the attitudes and disciplines necessary for the solving of problems, I consider the project a success. To help achieve this objective, I require a literature search for each problem, and also a final report. This report must be written in proper form, using the *Journal of the American Pharmaceutical Association*, Scientific Edition as the model. The term project is not made compulsory, except as a prerequisite for an A grade. The majority of the students, nevertheless, make some attempt at a project.

The various experiments and projects described above constitute the present extent of my revision of the course in pharmaceutical preparations. The important thing about this effort is the evaluation of the results. At this point one

steps on treacherous ground. The only way to evaluate objectively experiments with living subjects is to use statistical methods. Otherwise, all is mere opinion. I have not developed any such methods, but I still would like to describe what I think I have seen since I inaugurated the revision.

Comparing the students in the revised course with those in the former one, the most heartening thing I have observed is a changed attitude. The shift of teaching emphasis from the compulsive to the permissive has, I believe, had several happy results. One is that it is not at all unusual for the students to do more than is required. Some even spend extra time in the laboratory to follow up ideas which have interested them.

Another product of the changed emphasis is that dishonesty in the laboratory is no longer a problem. With the pressure to meet deadlines removed by the reduction in the number of official preparations, the temptation to make extra quantities of formulas and share the products is removed. Some may argue that students should be made to learn how to work under pressure. I agree, but the place for that is in the dispensing course. Even though pharmaceutical preparations is usually taught in the junior year, it is still elementary **pharmacy**. **Fundamentals can be learned adequately only if the pace is leisurely.**

Finally, I am convinced that a greater number of students than formerly have acquired independence of thought relative to pharmacy. Many students make up their official preparations, not mechanically, but with a critical, analytical attitude. Frequently, students suggest significant improvements in official products, or discover errors which have been generally overlooked.

To summarize, the pharmaceutical preparations course has been changed by making it less formal. The traditional content has been retained in reduced quantity. The scope of the course has been enlarged by the inclusion of experiments of various types. The results which have so far been obtained from this teaching experiment appear sufficiently favorable to justify continuing it.

An Undergraduate Course in Manufacturing Pharmacy*

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In the undergraduate course in manufacturing pharmacy senior students prepare, and observe the preparation of, a wide variety of pharmaceutical products for an 800 bed research hospital, with some 200,000 out patient visits per year. The course is offered as an elective to students with good records who are interested in industrial or hospital pharmacy. The course consists of a one hour lecture and conference and two 3-hour laboratory periods each week for two quarters.

In the first quarter the students do general pharmaceutical manufacturing. During the second quarter the students study the production of parenteral and allergenic preparations, as well as taking part in many of the procedures.

Many of the general pharmaceutical group of preparations, and at least 50% of the parenterals are special formulations for research and/or cannot be purchased in the form in which they are produced here. These special preparations are usually made by staff members rather than by students, and observation of these procedures is of considerable value to the students. In addition the students in the course have many opportunities to observe the research on dosage forms being carried out in the laboratory by graduate students in pharmacy.

The didactic portion of the course includes lectures, discussions, assigned readings, and reports on:

1. Formulations made in the manufacturing laboratory.
2. Basic principles of formulation design.
3. General principles of drug research and development, including screening and clinical testing.
4. General principles of drug production and control, including a brief treatment of sampling and of statistical quality control.

*A contribution of the Problems and Plans Committee read at the 1953 meeting at Salt Lake City.

5. Pharmaceutical development and production equipment.
6. Tablet manufacture and coating.
7. Parenteral production.
8. Allergen production.

Students usually work individually. Whether working separately or in teams, there is always specific assignment of responsibility. The students responsibility includes:

1. Careful study of the formulation, procedure, and equipment, before starting production. Discussion of key questions with the instructor is required.
2. Preparation of recommendations for desirable changes such as changes in formulations, equipment, procedure, labeling, and storage. If the student does not feel able to suggest improvements the instructor can then suggest a change and ask the student to comment on its value. Possible substitution of other equipment can be discussed here.
3. Preparation of a cost analysis of the materials for certain formulations. Emphasis is placed on the independent selection of manufacturer, quality, quantity, and package size purchased.
4. Understanding of equipment as evidenced by ability to sketch and explain safe operation, maintenance, and cleaning. Sketches should show the general appearance of the device and should indicate clearly the design of the working parts that are important to understanding the mode of action. The sketches should be carefully done, but they need not be of draftsman quality. Items such as diagrams and pictures taken bodily from other sources such as manufacturer's booklets may be a helpful supplement to the student's notebook but are not accepted in place of adequate drawings prepared by the student. The mode of action, use, cleaning, and maintenance of the equipment should be covered in complete and lucid fashion in the student's notebook. The manufacturer's booklets do not in general cover these topics adequately. Material taken from such sources and used without adequate elaboration and without being placed in the student's own words is not accepted.
5. Acquaintanceship with the pertinent literature including texts, journals, equipment booklets, catalogs, and price lists.

The next and major section of this report deals with the work in general pharmaceutical manufacturing, as it is the most basic and is taken by a greater number of students.

The work in general pharmaceutical manufacturing includes about 200 formulas each year, and an average of 2-3 lots of each formula, hence about 500 lots a year. The preparations can be divided into about 15-20 different types, principally clixirs, emulsions, ointments, solutions, suspen-

sions, syrups, tablets, and tinctures. An average of about ten different formulations is made of each general type. During a quarter a student will make or help make about thirty preparations.

The lot sizes are those used in the types of industrial pilot plants which deal with the development of dosage forms. Quantities range up to 100,000 tablets, 15 Kg. of ointments, and 100 L. of liquids. The equipment used is typical of such installations. During a quarter a student will use about twenty pieces of power driven equipment and will see other equipment in operation.

A student usually makes a given formulation only once during the course, and makes a given type of formulation the minimum number of times required to give understanding of the equipment. Such an arrangement is possible because the preparations made by the students constitute only a fraction of the total production of the laboratory. Most of the production is done by the seven full time staff members.

Safety and control are achieved by close personal supervision and by careful in-process control procedures. Procedures are evaluated by means of suitable tests before being put into use. Current expansion of testing facilities will permit an increase in the testing program and the production of other formulations.

In regard to personal supervision the staff members usually work with no more than two students at a time and careful consideration is given to the safety characteristics of each individual student. In-process control procedures include the recording of control numbers for raw materials and finished products, checking of each step in the procedure by a staff member, continual material identification, and final inspection by a staff member.

Preparations are assigned several days prior to the laboratory period so that the work sheets can be prepared and a study made of the procedure.

Initial entries on the laboratory work sheet include the preparation title, the quantity to be made, the ingredients and their quantities, and the manufacturing instructions.

A duplicate of the laboratory work sheet is prepared for the instructor's file (instructor's work sheet). After study of the formulation, procedure, and apparatus, comments on the plan are prepared and entered on the back of the instructor's work sheet. These comments have to do with interpretations of the procedural directions and should stress the decisions and difficulties expected and how to deal with them. The work sheets and comments are checked by and discussed with the instructor before starting to make the preparation.

During the process as ingredients are measured, the raw material control numbers or equivalent information are entered on the laboratory work sheet. The recording of this data is evidence that the student has inspected the drug or chemical and judges it to be correctly labeled. Students and non-pharmacist staff members are not permitted to open previously unopened containers. Such containers are to be opened only by the instructors who inspect the material before permitting it to be used. The instructor checks each measurement and each step in the process and signs the work sheet. Each portion of material, raw, semi-finished, or completed, is at all times marked with some form of identification sufficient to establish its identity to those individuals who assisted in the process.

When the preparation has been completed it is given a control number. This number is entered on the work sheets and on all labels. The labels in addition state the title of the preparation, the date completed, and the name of the individual who had the principal responsibility of its preparation. The work sheets are checked for any omissions and the preparations and work sheets are presented to the instructor for final approval, together with a four ounce sample for shelf study. The instructor inspects the preparation and work sheets and if satisfactory signs the sheets as having received final acceptance. The instructor then enters the preparation on the file card listing the production of this item and in a bound notebook which lists all preparations chronologically. The laboratory and instructor's work sheets are filed and the product is released for storage and dispensing.

The work on parenterals and allergens in the second quarter is in many ways similar to that already described. The principal differences come from the need for sterile pyrogen-free products and for many small containers. Considerable attention is given to the cleansing of containers and equipment, to the use of pyrogen-free chemicals and redistilled water and to manipulative details. A much greater proportion of the students time is devoted to observation of procedures as carried out by staff members and even more careful supervision is given the laboratory work of the student.

The parenteral section is roughly comparable in volume to the general manufacturing section. It has fewer general types of formulation, fewer different formulations of each general type, and smaller lots in terms of volume or weight, but has about four times as many lots a year (about 2,000), and vastly more individual containers (about 40,000 units). Production here deals mainly with liquids in multiple dose vials and in larger containers. The allergenic section makes about 100 different allergens and about 5,000 vials. Students make or observe the preparation of about forty parenteral and allergenic preparations during the quarter. Sterility tests are carried out on every unit of some preparations and on occasional lots of others. Tests are run in part by the manufacturing laboratory and in part by other departments of the university.

One of the objectives of the undergraduate course is to serve as a basis for the graduate courses in pharmacy, with which it is closely integrated.

Briefly stated, the graduate course in manufacturing pharmacy is designed to help furnish a foundation for research on the development of dosage forms. The work includes studies of:

1. General principles of drug research, development, production, and control.
2. Methods of procurement of information, of both practical and theoretical value, from pharmaceutical and other fields, for formulation, selection of equipment and of control methods.
3. Statistical methods of value in such work including design and analysis of experiments and statistical quality control.

4. The effective organization, summarization, and presentation of data and concepts by textular, graphic, algebraic, and other means.

SUMMARY

An undergraduate course in manufacturing pharmacy is given in a research and manufacturing laboratory located in a large research and educational hospital. The students make a wide variety of preparations under a rigid system of in-process control, they observe, and to some extent aid in, the preparation of many special formulas desired by the hospital staff who stress research, and they observe research being carried out on the development of dosage forms by graduate students in pharmacy. The course is a foundation for work in industrial and hospital pharmacy and for graduate programs in those fields.

Seasonal Fluctuations in Retail Drug Store Sales*

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The seasonal fluctuation can be defined as a type of economic fluctuation which recurs at approximately regular intervals within a year. It may occur once each year or more often. Seasonal fluctuations, in contrast to other types of economic fluctuations, are fairly predictable; and since they are somewhat predictable, it is sometimes possible to undertake action which will reduce the risks involved. The danger from seasonal fluctuations is that of excess capacity in the slack periods. This excess capacity is reflected in the merchandise

*Read before the Section of Teachers of Pharmacy Administration at the 1953 meeting in Salt Lake City.

inventory of retail concerns and also in the number of sales people on the payroll. If the inventory is carried for the whole year at a level necessary to meet a seasonal peak in sales, stock turn-over will be low and capital utilized improperly. The inventory problem can be exceptionally serious in a period when inventories must be built to prepare for a seasonal peak in sales at a time when sales themselves are at a low point. A situation of this kind can cause a serious drain on the liquid assets of the establishment since it is not likely that the whole increase in inventory can be financed through accounts payable and still take advantage of discounts. It is quite obvious also, that a sales force adequate for a seasonal peak cannot profitably be maintained the whole year. On the other hand, it is difficult, if not impossible, to obtain well-trained part time clerks.

Seasonal fluctuations can be caused by a variety of factors but perhaps the most important to retail trade is that factor of custom or mores. Christmas, Easter, Mother's Day and like holidays cause marked fluctuations in retail trade in our society. Another factor which causes fluctuations in raw data of retail sales is the presently used calendar. However, these differences are of no particular significance. The fact that January has three more days than the ordinary February does not in itself mean that January is a better month in which to do business.

The purpose of this study was to determine as far as possible, the extent of seasonal variations in the retail drug store field and to determine, where possible, the reasons for any such fluctuations.

The raw data for the calculations are the unadjusted, estimated, monthly sales of retail drug stores, both independent and chain, for the period 1939-1951 as taken from the **Survey of Current Business**, 1940-1952. Since 1943, the sales estimates have been obtained by use of records of sales tax collections in eleven states (Ohio, Michigan, Illinois, Iowa, Missouri, West Virginia, Mississippi, Oklahoma, Colorado, Washington, and California), these states having been calculated to do about 35% of the retail trade in the United States.¹ Before 1943 the estimates were made by a method of identical sam-

pling. This means of obtaining sales estimates was considered unsatisfactory since it reflected only changes in sales of identical stores and did not allow for stores coming into and going out of business. The newer method corrects for this deficiency.

The first method used to determine seasonal fluctuations was that devised by Simon Kuznets². A twelve-month moving average centered in the seventh month was calculated for each month July, 1939 through June, 1951. The twelve-month moving average for July, 1939, for example, was obtained by adding the raw monthly figures for January, 1939 through December, 1939 and February, 1939 through January, 1940 and dividing the total by 24. This gives an average centered in July, 1939. The same figure could be obtained as follows. The monthly sales for January, 1939 through December, 1939 would be averaged. This average would fall in the middle of the year or between June 30 and July 1. The next step would be to figure an average which would fall between July 31 and August 1. Then by averaging these two figures the final average would be centered in July. The first method described does all this in one operation.

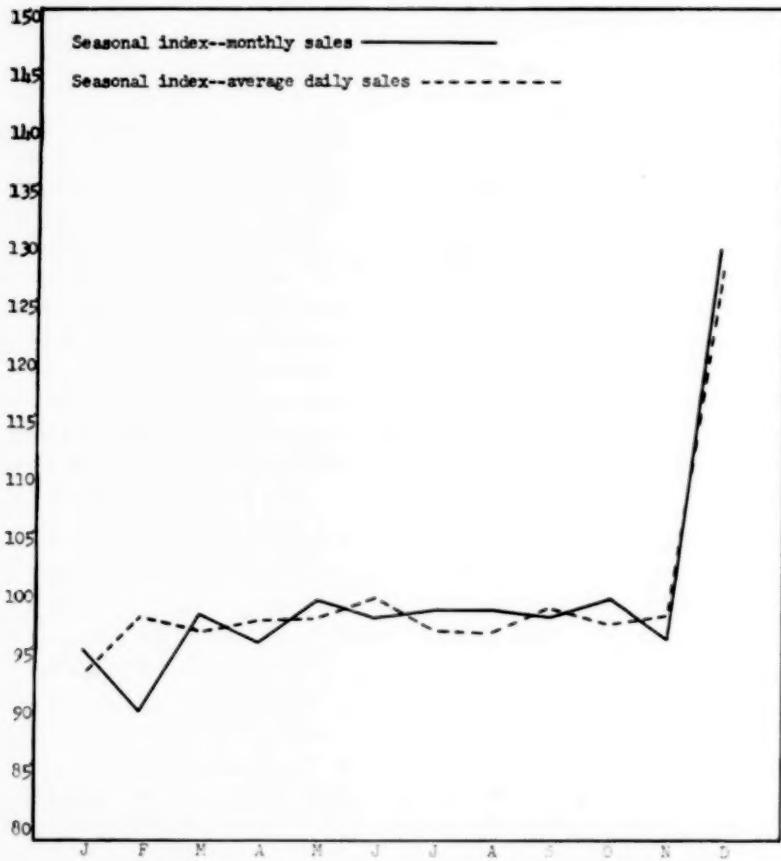
The raw data for each month are then expressed as percentages of the centered moving average for the same month, and these percentages arrayed from highest to lowest for January, February, etc., and the middle four items in each array averaged. The modified mean so obtained is considered to be superior to taking an average because it reduces the effect of extreme variations.

The twelve monthly figures so obtained are adjusted so that they average 100. This final figure for each month is used as the seasonal index for that month for the period 1939-1951 and measures the seasonal movement above or below the normal represented by the twelve-month averages. The ratio-to-moving-average method of obtaining seasonal indexes cancels out the effects of random movement of sales, reduces the effect of cyclical fluctuations, and eliminates secular trend distortion by comparing the raw data with the twelve-month moving averages.

As can be seen from Chart 1, and Table 1, there is an extreme peak in December and a rather random fluctuation for the rest of the months. It is apparent, however, that there is a low point located at each of the short months. This, of course, is nothing more than might be expected since there will be fewer business days in February than in March, for example. There is also a low point located in the month of January.

CHART 1

Seasonal Fluctuations in Total Sales of
Retail Drug Stores 1939-1951



In an attempt to obtain a clearer picture of the seasonal variations, the indexes were again calculated using the method described by Joy and Thomas,³ which corrects for the number of business days in the month.

TABLE 1

Data on Seasonal Fluctuations in Retail Drug Store Sales

Month	A	B	C	D	E
January	95.5	93.5	100	295	568
February	90.1	97.8	95	287	542
March	98.4	96.6	103	305	533
April	96.0	97.6	93	294	530
May	99.9	98.0	89	304	512
June	98.2	99.7	86	301	506
July	98.9	97.1	85	307	497
August	99.0	96.8	89	299	504
September	97.4	98.7	89	299	511
October	100.0	97.6	94	307	538
November	96.7	98.2	93	296	594
December	130.4	128.0	101	394	545

Column A—Seasonal Index Based on Monthly Sales

Column B—Seasonal Index Based on Average Daily Sales

Column C—Index of Fluctuations in Number of Prescriptions Filled

Column D—Monthly Sales for Retail Drug Stores, 1948, in Billions of Dollars

Column E—Monthly Inventories for Retail Drug Stores, 1948, in Billions of Dollars

Source for D and E: **Survey of Current Business, 1949**

Since the number of business days per month varies with different retail drug outlets, and since many of them are open for business at least a portion of each day, it was arbitrarily decided to divide the raw monthly data by the number of days in the month. Various statistical dangers are involved in a manipulation of this variety, such as the arbitrary choice of the number of business days and the small absolute size of the resulting figures in which rounding might cause considerable variation in the index figures.

The seasonal indexes were calculated as before using instead of the original data, the average daily sales for each month and are shown in Table 1. A graphic comparison between the indexes obtained by the two methods is shown in Chart 1.

There is apparently considerably less fluctuation when the indexes are calculated to eliminate calendar differences. There is still the primary peak in December, due to the sales of Christmas merchandise. The low point in the year is found in the month of January. One possible explanation for this is that it is a result of the holiday buying in December and has two facets—the first being that some merchandise is returned in this month, thus lowering net sales, and second, that many people feel the need to economize after having reduced their savings in December. The rest of the minor troughs are not as easily explained. The minute dip in March may possibly be explained by the fact that this is income tax month.

In order to find possible factors which might influence the seasonality of drug store sales, other than things influencing retail sales in general, material was gathered from the *Lilly Digest* on month to month fluctuations in prescription sales.

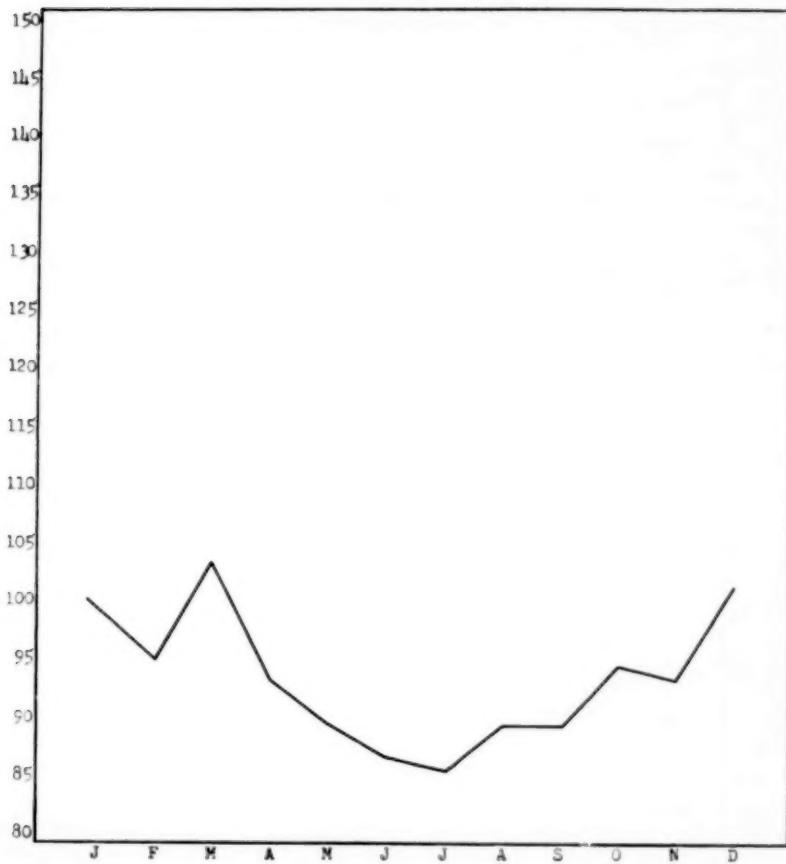
These figures are calculated by taking the number of prescriptions filled in January as a base of 100. The rest of the months are expressed as a number representing the number of prescriptions filled for each 100 filled in January of the given year. A modified mean was obtained by arraying the monthly figures for eight of the years from 1940-1951 and averaging the four middle items. The resulting variations are shown in Chart 2 and Table 1. There is somewhat of a seasonal variation in prescription sales but not of the magnitude that might be expected. The low point comes in July, but it is approximately 85% of the volume of the base month of January.

These figures are not completely comparable to the seasonal indexes for total sales since the prescription sales are based on number filled rather than dollar receipts. They could be made roughly comparable by applying the average prescription price although this average price is on a yearly rather than a monthly basis. Even though the number doesn't fluctuate widely, the receipts might since it is possible that winter prescriptions, consisting largely of antibiotics might bring greater monthly revenues than the summer prescriptions. Also, these figures are not corrected for the number

of business days but are on a whole month basis. However, they do give an indication which is roughly comparable to the sales indexes.

In order to determine how much impact this seasonal variation has on total sales, the relationship of prescriptions to total sales was found in the *Lilly Digest*. For the period 1939-1951, an average figure of 15.6% was determined. On this basis alone, one might expect a slump of total sales of roughly 2.5% during the summer months. Apparently however, the

CHART 2

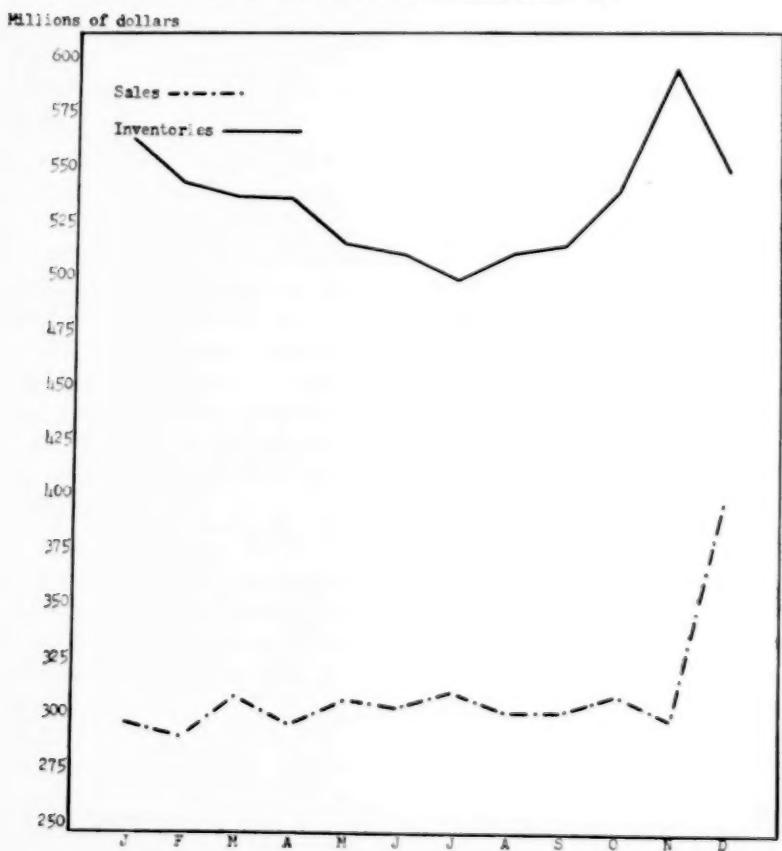
Seasonal Fluctuations in Prescription Sales
of Retail Drug Stores 1939-1951

average pharmacist has done an adequate job of protecting himself against fluctuations by the addition of lines of merchandise which have a sales peak in the summer months when the sales of prescriptions and medicines decline.

It would appear then, that retail pharmacies are not at present faced with a serious seasonal problem with the exception of the holiday trade in December, and according to limited figures available in *The Survey of Current Business*, the building of inventories for the December sales peak takes place over several months. In 1948, for example, the estimated to-

CHART 3

Retail Drug Store Sales and Inventories--1948



tal inventory dropped gradually from January to July, then built up gradually, reaching a peak in November. The monthly inventory and sales figures for 1948 are shown in Chart 3 and Table 1. As can be seen from the chart, inventories in 1948 were built over a period when sales were at a reasonably stable and high level, and hence did not present too much of a drain on cash at any one time.

It should be remembered that this study deals with the aggregate of some 55,000 retail drug stores and even though there is apparently no strong seasonal variation in sales for the aggregate, individual store owners may have such a problem.

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Prescription Surveys and Their Significance in Teaching Pharmacy*

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During the past year or so, pharmacy colleges have had the opportunity to cooperate with two national prescription surveys which include the one conducted by Research Society, Inc., in Boston and also the Abbott Survey conducted by Abbott Laboratories of North Chicago, Illinois. Both of these

*Read before the Section of Teachers of Pharmacy at the 1953 meeting in Salt Lake City.

surveys have, of course, enabled us to see the true on-the-spot picture of trends in prescription writing and therapy on a local and national basis. It has also enabled many students to go into drug stores and obtain a practical idea as to how many prescription departments are conducted. These opportunities cannot be measured in the financial remuneration that the student obtains, but also from the practical and educational point of view.

Considerable time could be spent in evaluating many phases of the information that may be obtained by studying the various prescriptions as they present themselves. This paper supposedly is to be directed towards teachers of pharmacy and so the subject in the main should be on pharmaceutical problems and methods of teaching pharmacy but, certainly, I believe everyone will agree that no matter what phase of pharmacy we are teaching, the other phases also dovetail with each one's individual subject. Probably one of the most fertile fields in the prescription survey is the productiveness of supplying boundless material of interests to the educator teaching pharmaceutical administrative subjects.

These surveys certainly confirm previous hypotheses by many educators and pharmacists that there is a necessity for more economic education for the student of pharmacy. Many of the pitfalls of the economic situation in many drug stores may be borne out by the surveys attesting to the great differential in prescription prices of identical prescriptions. Certainly, the economist in this field will have much to work with in compiling the material available to him.

As far as the teacher of pharmacy is concerned, he can immediately see the practical application of timely information by studying the prescriptions that are surveyed, and also comprehend the lack of information that is available for the pharmacist to work with as he prepares to dispense many of the prescriptions written. Many of these points may seem trivial, but they certainly attest to the necessity and the value of the pharmacist's correct interpretation of many prescriptions as written by the doctors in the various communities. There is no question that it will be easier for a teacher of prescription practice to take many of the prescriptions as they

are written by the doctors and filled by the druggists to point out many of the shortcomings in prescription writing by the doctor and prescription dispensing by the pharmacist.

It will not be within the realm of this paper to pick all the flaws that we have seen in prescription writing by medical practitioners or the conduct of dispensing prescriptions by pharmacists, but to point out a few examples in which to give the teacher of prescription practice food for thought in presenting many of the problems and the duties that should be expected of the pharmacist in his conduct in dispensing and compounding pharmaceuticals.

As an example, the following prescription was picked out of a survey prescription file:

Rx.
Penicillin 50,000 units
M. Ft. Charts #12
Sig. 1 chart q. 4 hours

This is a good prescription to present to students either with thought of penicillin therapy or with the question as to how they would compound this prescription. Certainly, the educator would immediately realize that many problems would confront the pharmacist as to his procedure and steps in compounding it.

Here is the opportunity for a pharmacist to grasp, showing the necessity for him to continually be consulting with the doctors in his area. Was this prescription intended for an adult or was it intended for a child? The name on the prescription did not give any clue. Again, it may be pointed out to the student that many doctors will indicate by name or manner as to the age of the patient, although it is frequently overlooked. One pharmacist compounded a prescription of this type by using 50,000 unit buffered tablets. The prescription was intended for a baby and, as may happen, the sodium citrate buffer caused the child to vomit, whereas, had soluble penicillin tablets been employed and the pharmacist had checked with the practitioner, such an incident probably would not have happened and, of course, much prestige may be lost by such an error in judgment and compounding.

This prescription is a good example and a case lesson to point out to the student in prescription practice that we

cannot compound doctors' prescriptions exactly as written by the doctor, as advertised by many pharmacists in their trade slogans. The pharmacist, it must be pointed out to the student, must compound the prescription exactly as to the ingredients, dose, etc., that the doctor is thinking and not as he sometimes writes; which certainly means that along with teaching dispensing pharmacy we must also keep in mind the interprofessional relationship between the two. In questioning students as to how they would compound a prescription of this type, some anticipated the use of penicillin from an injectable vial and thus emptied the contents in a mortar and mixed with lactose. This would be fine if the prescription were intended for a child, although probably not as economical as using soluable tablets and of course, if it were intended for an adult, would of necessity be buffered.

The second prescription studied was as follows:

Rx.
Penicillin 3,000,000 units
Aqua distillata q.s. oz. VI
Sig. Teaspoonful every 4 hours

Here again, we have the problem of a prescription that was intended for an adult, yet the pharmacist compounded it exactly as written. He did not buffer it and thus, being taken by an adult, the question is, how much penicillin was destroyed by the hydrochloric acid of the stomach and would the patient have been just as well off to have taken water during the same period of time? Certainly, this prescription should have been buffered with sodium citrate.

Prescriptions of this type also present opportunities for research study such as "stability of penicillin in gastric pH without buffering agents present." Many problems and hypotheses present themselves to the individual interested in pharmaceutical research.

It is not uncommon, in searching through the prescription files, to find many other glaring examples that the educator attempts to point out to students in prescription practice of how careless one may get in filing a prescription, such as, lack of information in methods of compounding or incorrect form dispensed. As an example, one will frequently find a prescription calling for Bilron Cap. #24. This may be con-

sidered by the druggist as a 5 gr. capsule but certainly, Lilly also markets a $2\frac{1}{2}$ gr. size and there are many instances where the pharmacist will dispense the size that he considers the doctor desires or perhaps, he on some occasion had contacted the doctor and was informed that that was the size he wanted when he wrote for that particular product and so in that particular store no notation is made on the prescription as to size dispensed. Yet, many points could be discussed as to the reason for the pharmacist noting on the prescription that the 5 gr. size has been dispensed. In hundreds of other cases where other drugs are marketed by manufacturers, many products come in various dosages, and it is here, by using these prescriptions as examples, and pointing out to the student in pharmacy the opportunity for him to consult with the doctor and inform him that it would be much better for him to specify the exact strength that he desires rather than leave it as a verbal order, because on many occasions, the patient may take the prescription to a druggist who is not familiar with the doctor's habits and this pharmacist may dispense what he chooses even though he may try to contact the doctor and in the attempt to find that the doctor is not available. Certainly, this contributes to many delays and the efficiency of the prescription department is at a very low ebb. Thus, by students seeing and being pointed out the consistency of these irregularities, they will become more conscious of the importance of their position in handling prescriptions and acting as a consultant to the medical profession.

Product formulation in regard to various forms of therapy such as analgesics, absorbants, hypertensive agents, etc., should be given its share of attention. The importance of the various type formulas with regard to the amount of time that should be allotted to the study and evaluation of each therapeutic type may readily be determined by the cross section of the prescription survey.

Early this year, at the Annual District Meeting #3 of the NABP and AACP, I was called upon to present what should be considered model state board questions in the future. Many interesting and thought provoking questions not only for state

boards but also in the classroom may be derived from a study of the prescription surveys.

Formulation of therapeutic formulas with respect towards efficacy, modes of administration, stability, elegance, palatability, drugs of choice, standards and individualized therapy should be considered the specialty of the pharmacist. With this in mind, a few of the following questions were presented as types that could be used either for state boards or in the classroom.

Pharmacy Examination (type questions)

- I. Wm. S. Merrell markets the following specialty products:
 - a. Nitranitol Tablets which is a brand of Mannitol Hexanitrate may be found listed as: (Circle the number which indicates the status of Mannitol Hexanitrate) (1) Official USP XIV (2) Official NF (3) NNR 1952 (4) None of these.
 - b. At what dose would you expect Mannitol Hexanitrate to be marketed in?

 - c. Nitranitol with Phenobarbital Tablets.
What would you predict this formula to be?
 1. Nitranitol
 2. Phenobarbital
 - d. Nitranitol with Phenobarbital and Rutin Tablets.
What would you predict this formula to be?
 1. Nitranitol
 2. Phenobarbital
 3. Rutin
 - e. Nitranitol with Phenobarbital and Theophylline Tablets.
What would you predict this formula to be?
 1. Nitranitol
 2. Phenobarbital
 3. Theophylline
- II. What is the therapeutic and pharmacologic basis for the formulas in:
I, b?
I, c?
I, d?
I, e?
- III. a. Formulate a formula for the usual adult dose of a capsule containing a triple Sulfa combination, with penicillin.
b. What are the therapeutic and pharmacological advantages of this formulation?
c. Formulate two type formulas for capsules indicated as an analgesic.
d. List advantages of each.

You will note that a certain amount of pharmacological questions are dovetailed along with the heading of pharmacy examination, but certainly, with our present trend of thinking, it would be sheer neglect not to dovetail questions of this type in the examination. In conclusion, I would like to delve on one idea that certainly is a pharmaceutical problem and this is the disregard for correct interpretation of minim therapy for drugs that are intended for systemic absorption.

We have few compounded prescriptions left that we are called upon to prepare by the medical profession, yet one of these which is still fairly common all over the United States is a Saturated Solution of Potassium Iodide. Although we have a few others, we will use this as an example of a method of prescription labeling that should be remedied by pharmacists around the United States. As an experiment in a small way, students were asked to take ten prescriptions written as follows:

Rx.

Sat. Soln. Pot. Iodide oz. 1
Sig. 10 minims t. i. d.

These prescriptions were compounded by various drug stores in the area of University, Mississippi, and Memphis, Tennessee. The label on all ten prescriptions read as follows:

Take 10 drops three times daily.

In checking the delivery volume from each of the prescriptions, not one delivered ten minims and all delivered from four to seven minims of the desired drug. In recalibrating the droppers, in most instances they required at least seventeen to twenty drops to deliver the desired ten minims.

We all realize that this type dispensing has been going on for years in regard to minim therapy but certainly, it is food for thought of what can be done by the pharmacist in improving pharmaceutical dispensing service and here is another opportunity for consultation with the medical profession.

In conclusion, I wish to point out that I have mentioned only a few phases that present themselves and will continually present themselves to the educator who is interested in studying the present day problems and practices of the prescription department, via the prescription surveys.

Proficiency in Pharmaceutical Calculations

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A pharmacist must know pharmaceutical calculations as well as he knows his name; yet, many pharmacy graduates have difficulty in passing that portion of the state board examinations. It would appear that an explanation should be forthcoming from the college educator; however, in contrast to what one would expect, some pharmacy educators state that they do not like to see the college of pharmacy offer a separate credit course in pharmaceutical calculations. Therefore, instead of an explanation, another question is raised. The following is an attempt to answer two questions; namely, (1) Why do pharmacy college graduates have difficulty in passing a state board examination on pharmaceutical calculations? and (2) Why do some pharmacy educators think little of pharmaceutical calculations as a college credit subject?

The mathematician's point of view, rather than the pharmacists's, will be expressed in answering the questions, since the author is one who has specialized in the problems of teaching mathematics at the college level.

It would be well, in answering the questions, to start with an analysis of the thinking of the educator with regard to the teaching of pharmaceutical calculations, and this can be traced to the nature of the subject. The arithmetic of pharmacy is what it implies—arithmetic. And pharmaceutical calculations can best be described as "applied" arithmetic because it involves, for the most part, the concepts and skills required in mastering arithmetic. It is essentially for this reason that the educator tends to look down upon the subject and does not consider it a college level course. This is not unusual, for anyone who has had experience with elementary, secondary and college education comes to associate the teaching and learning of arithmetic with elementary education. To offer a course in arithmetic or applied arithmetic at the college level goes "against the grain" of many educators, for it

is in opposition to what they think should be taught at the college level. For this reason the teaching of pharmaceutical calculations has often been relegated to a minor position in the minds of pharmacy educators and this is, in part, why pharmacy graduates are not as competent in the subject as they should be.

However, despite the attitude of some educators, a study of the catalogs of many colleges of pharmacy will show that pharmaceutical calculations is offered as a separate college-credit course. Therefore, the pharmacy student **does** receive training in the subject, but this does not erase the fact that upon graduation a number of students fail to show the results of their training on state board examinations. This, then, is an indication that offering a course or courses in the subject does not automatically solve all problems nor attain all goals.

If one were to investigate the manner in which arithmetic is offered in elementary schools, he would discover that the subject is offered every year from the first through the eighth, (which, in most instances, is the end of elementary education). In the secondary schools, arithmetic is not offered as a separate course, and the students continue their mathematical education by taking courses in algebra, geometry and, perhaps, other courses in mathematics. The assumption is often made that eight years of arithmetic is sufficient for all students and that the proficiencies gained in this eight-year period are maintained in the study of secondary school mathematics.

If the assumption made about the maintenance of proficiencies is to hold up, two conditions must exist in secondary school mathematics. First, the student must have the chance to use his acquired arithmetical concepts; and, second, he must have an opportunity to practice the arithmetical skills he has acquired.

Those familiar with secondary school mathematics know that the first condition **does** exist, for not only does the student have the chance to use his acquired concepts, but he also learns to extend and generalize them and, at the same time, he acquires new ones. However, the second condition **does not**

exist in the same sense that the first does. The student has an opportunity to use his acquired arithmetical skills, but not to the extent that he used them previously in the elementary school. The nature of mathematics subjects taught in secondary school does not necessitate a great deal of arithmetic computation. Consider the subjects of plane and solid geometry. Both are traditionally taught with little or no arithmetical computation involved. There is arithmetical computation in elementary and intermediate algebra, but the intensity and the scope of it are limited. Trigonometry is one of the few courses wherein the student must do a considerable amount of arithmetical computation, but this, too, is limited when the use of trigonometric and logarithmic tables are introduced.

Considering the above, one might very well question the assumption that the proficiencies gained in the study of elementary school arithmetic are maintained in secondary school mathematics. In those instances where students have been given proficiency tests in arithmetic each year, as they progressed through elementary and secondary schools, the assumption has been shown to be unrealistic. The results of the tests indicate that students gain in proficiency in arithmetic as they progress through elementary school, reaching the highest level in the last year of elementary school.

However, the tests indicate that in secondary school, there is a steady decrease in arithmetic proficiency each year, and by the end of the last year of secondary school, the level of arithmetic proficiency is decidedly below that attained in the eighth grade. This means that although a student gains in mathematical knowledge in secondary school, he loses in speed and facility in dealing with arithmetic computation.

There are two things to be learned from this: First, the improvement of arithmetic proficiency depends upon constant and extensive use of arithmetical concepts and skills. And, second, arithmetical proficiency will decrease if constant practice in the use of concepts and skills is not provided.

In view of what has been brought out about pre-college arithmetical training and proficiency, it is safe to state that

the students entering a college of pharmacy are not as competent in arithmetical computation as they are generally assumed to be or as they should be. The mathematics offered in the college (usually in the first year) does very little, if anything, to correct this; for, like secondary school mathematics, it places little emphasis on computation. Some mathematics educators have realized this and have suggested that the first year course in college mathematics start with arithmetic and stress arithmetical computation throughout. This idea has made little headway so far due to the attitude previously mentioned which is against the teaching of arithmetic at the college level. Therefore, it can be stated that college mathematics generally does little in assisting the students to recapture their speed and facility of arithmetical operations.

When the student enters the pharmaceutical calculations course, usually in the first or second year of college, he has not had any comprehensive work in arithmetic since the eighth year of elementary school. The calculations instructor must assist the student in overcoming the effects of this five or six year period and then must undertake to teach the student new concepts and skills. If the instructor is successful, the student re-acquires the arithmetic proficiency he once possessed, acquires new concepts and develops new skills by the end of the course.

If a recurrence of what happened to arithmetical proficiency in secondary school is to be avoided in the college of pharmacy, the student must have an opportunity for extensive and constant use of the newly-acquired concepts and skills of pharmaceutical calculations. If this opportunity is not provided for in the curriculum or the professional courses, a decrease in proficiency can be expected every year after the course is offered. It is very likely that a student who successfully passed a course in pharmaceutical calculations in his first or second year of college will have difficulty with the same material on a state board examination taken two to four years later.

In order to guarantee that pharmacy students will be able to perform satisfactorily upon graduation, it would ap-

pear that there are three approaches the college of pharmacy could take:

1. To offer a course in pharmaceutical calculations early in the curriculum and then to make provisions in each succeeding year for the student to be required to use the acquired concepts and practice the developed skills in the professional courses.
2. To offer a course in pharmaceutical calculations every semester in the pharmacy curriculum. This could be done by offering a one-credit course every semester instead of a three-credit course in one or two semesters.
3. Not to offer a separate course in calculations, but to devote a portion of every professional course in the curriculum to the teaching of pharmaceutical calculations.

There are advantages and disadvantages to all three approaches. The first approach is essentially the same as that which is presently being used by most colleges of pharmacy, and it would be more effective if the colleges made a particular point to provide in their professional courses the necessary extensive practice in the acquired concepts and skills of pharmaceutical calculations. The third approach would satisfy those who object strongly to offering calculations as a separate credit course; but in order for it to be successful, a great deal more planning must be done in all of the professional courses than is required in the other arrangements. The second approach is probably the easiest to establish and does not require the cooperation of all professional teachers. However, it would probably require that credit hours be added to an already crowded curriculum. In the last analysis, it will be up to the individual college of pharmacy to make its own decision on what approach it will use and how this approach will be modified to suit the institution.

Although there is no single answer to how pharmaceutical calculations should be offered to pharmacy students, there are some basic facts which must be kept in mind when the question is considered; and they are:

1. Arithmetical proficiency can only be maintained or increased by providing for extensive practice in arithmetical concepts and skills.
2. Entering college students are usually below eight grade level in proficiency in arithmetical computation.

3. The pharmaceutical calculations teacher must not only teach the pharmacy student new concepts and skills, but he must also teach old arithmetical concepts and skills.
4. The college of pharmacy must provide the student with the opportunity to practice his pharmaceutical calculations concepts and skills after he acquires them, and this practice must be continued until the student enters the profession.

If these four basic factors are remembered, there is a greater chance that the teaching of pharmaceutical calculations will be viewed in its proper perspective and that it will be taught accordingly.

Educators of the Future*

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I should like to begin with a statement of the function of science as given by Richard Bevan Braithwaite as 1946 Tarner Lecturer in Trinity College, Cambridge: "The function of a science . . . is to establish general laws concerning the behavior of the empirical events or objects with which the science in question is concerned and thereby enable us to connect together our knowledge of the separately known events, and to make reliable predictions of events as yet unknown."¹

That, as a definition of science function, leaves us as science educators certain responsibilities which I think many of us in pharmaceutical education fail to recognize. If the function of science is "to establish general laws," then we as science educators must be primarily concerned with the transmission of these laws. Further, if the function of science encompasses the connecting together of knowledge and making possible reliable predictions of events yet unknown then our primary objectives become totally three-fold—the transmission of basic facts, also providing the student with the information necessary for him to make consistent correlations

*Read before the 1954 District #7 AACP and NABP meeting in Seattle.

and to make reliable predictions of the science according to these known basic facts or laws.

It should be obvious by this time that I am going to take "pot shots" at "peripheral education" in pharmacy. And by peripheral education I mean the type of education evolved from courses that deal with improperly organized minutiae to which the Report of *The Pharmaceutical Survey* refers as "overemphasis on memorizing names and forms of drugs and preparations."²

According to *The Pharmaceutical Curriculum* by Blauch and Webster there are sixteen colleges that teach a course called NNR; twelve, a course called USP and NF; three, a course called USP, NF and NNR; and one, a course in USP.³ In many instances these are camouflages for the so-called cram courses purportedly offered in preparation for state-board examinations. And there are many other courses in the pharmaceutical curriculum which are just as "peripheral" as these, such as, posology, courses in proprietaries, and pharmacognosy, which require rote memory of isolated facts where the only organization is the position of the substance in the alphabet, the name of the manufacturer, or some other empirical classification. The simple memorization of material in artificial, sequential arrangements is something like learning to cook a meal by beginning at the beginning of the cook book. The result to those on the receiving end is dull to the point of nausea and the students' reactions to "peripheral" courses differ little.

Rote memory is necessary when material demands it, but I think it's cruelly wasteful and educationally detrimental when used upon material that has logical associations and which can be attached to already existing systems. In the words of Bacon: "Therefore if the notions themselves (which is the root of the matter) are confused and over-hastily abstracted from the facts, there can be no firmness in the superstructure. Our only hope therefore lies in a true induction."⁴ If we go further back into our educational history, it was Aristotle who perceived the necessity for generalizations induced from a number of particular instances. Yet we as phar-

maceutical educators run rampant over the basic educational concepts of science which are over two thousand years old. I wonder how dare we?

One of the basic concepts which divide a tradesman from a member of a profession is the difference in the complete understanding of activities of the respective vocation. Tradesmen usually have a so-called working knowledge of their craft. The basic understanding of physical and biological laws is lacking. A true professional not only realizes the importance of his functional capacities but also knows all of the biological and physical laws upon which they are based. For many years pharmacy was practiced as a trade, taught as a trade, and—whether we like it or not—was a trade. We are now pulling ourselves (albeit laborously at times) from this swamp of functionalism into an era of scientific professionalism. But educators who are teaching courses "peripherally" are, in my estimation, lead weights that are pulling pharmaceutical education further into the all-too-obvious educational quagmire of mediocrity so prevalent in colleges and schools of pharmacy in this country.

I think it behooves each of us to examine the courses we teach and to examine them carefully. How much are we teaching that involves basic laws of general application? How much of it involves the "glue" that holds information into integrated wholes? How much of it provides a basis for future reference by the student so that when advances in science occur in his lifetime he has been prepared to the best of our ability to evaluate and integrate those advances into his armamentarium of knowledge? I think these are the questions that we must ask ourselves of every segment of every course. The inclusion of minutiae should be done only to make more interesting or illustrate the framework of knowledge which (1) promulgates basic laws, (2) co-ordinates and combines information to basic laws, and (3) provides the basis for projection into future applications. And those of you who are teaching by requesting a student to learn ten pages of the NNR for every class period or asking him to learn five things about twenty drugs every week are educators not worthy of the title. I should

like to quote further from the *Report of The Pharmaceutical Survey*: "Obviously mere memorization does not prepare one to practice a profession."⁵

I should like to illustrate just how effective such peripheral education is in preparing a student for his profession. And I should like to do so by quoting a classical experiment in college student retention. Professor James E. Wert of Ohio State University in co-operation with the Bureau of Educational Research set up six examinations in zoology. These examinations were specifically designed to test each of the following types of information: (1) naming animal structures, (2) stating function of structure, (3) terminology, (4) other facts, (5) interpreting new experiments, (6) applying principles to new situations. The examinations were given at the end of the course and one, two, and three years after the course was completed. The percentages of retention are illustrated in the following table. None of the students tested took any more zoology. All were called to take the tests without warning.

Retention of Various Types of Material⁶

Objectives	End of Years		
	One	Two	Three
Naming animal structures.....	23	18	10
Stating function of structures.....	59	47	41
Terminology	57	54	51
Other facts	70	68	49
Interpreting new experiments.....	111	114	119
Applying principles to new situations.....	127	154	158

I think we as pharmaceutical educators must ask ourselves, "How much of our teaching is in the naming-animal-structures category? And at the other extreme, "How much gives bases for interpreting new experiences?"

If our courses give little practice and bases for the interpretation of new concepts, then we are indeed charging students an exorbitant fee for information which will remain with them for a comparative moment in their lifetime. Further, we are boring them beyond reason and insulting their intelligence.

I have asked myself why courses taught in a peripheral manner exist. In many instances I think the objectives of the

courses are consistent and sincere, but the handling inept. Inept possibly because of indolent instructors or because of overworked instructors. I think pharmaceutical administrators very often forget, or have never been aware, that instructors to be productive to capacity must have time to think. An instructor who spends the greater share of every day in class, laboratory, or on other assignments can only be expected to take the line of least resistance in preparing courses. An instructor, for example, who is expected to review the contents of the USP in a given time certainly finds it easier to assign a certain number of pages to be committed partially to memory, than to outline the material of basic importance into logical categories and draw together the integral parts with specific examples. This takes time and thought. "For science as it advances does not rest content with establishing simple generalizations from observable facts; it tries to explain these lowest-level generalizations by deducting them from more general hypotheses at a higher level. Such an organization of a science into a hierarchical deductive system requires the use of subtle deductive techniques . . .", and so does the teaching of science. For it must be remembered that, "It is the pattern and not the individual contents that constitutes the memorial residuum."⁷

I think the pressure of state-board examinations also leads to the offering of a type of course which very often becomes peripheral in nature. I have mentioned the three types of courses which are most apt to fall into this category: pharmacognosy, compendia courses, and proprietary courses. As a pharmacognosist, I can say without apologies there is no question about the justification for the existence of pharmacognosy courses. If they are taught in a peripheral manner, it is because of ineptness or that the peripheral aspects are dictated by state boards. As for compendia courses, possibly there is some justification for their being taught as integrating and review courses. But I believe they do more to disintegrate knowledge than to integrate it if taught peripherally. I quite agree with those who say that too often students come to think of their education in terms of units—Pharmacy

105, Pharmacy 210, etc.—rather than as integrated parts of a whole. Assuming faculty steps have been taken for such integration, I think the awareness of this integration could be best effected by a continual dovetailing of information by instructors and possibly by yearly comprehensive examinations demanding integrated thinking by the students.

For courses dealing in proprietaries, I have little sympathy unless the proprietaries are intelligently grouped to provide general basic information to which other future proprietaries may be applied. Otherwise the course is of prevailing importance only. Of course, the state-board problem in this area is far from solved.

What I have said I don't assume will be popular with some of you. Even among my own colleagues I shall probably be considered an iconoclast. What I have suggested in many instances would not be popular with students. I find they often mildly object to learning, but when you ask them to think and learn at the same time they often consider themselves quite abused. To those educators who worry about state-board examinations, and to those state-board members who are concerned about what to ask, the generalizing of instruction may be objectional. I admit it's easier to ask specific questions about minutiae and get parrot answers. Conversely, it is relatively easy to memorize parrot answers for type questions. The employers of young graduates will object to the graduates not knowing who makes what in what sizes. I think this information constitutes minutiae gained of experience and from the applications of broad concepts. I again quote the *Report of The Pharmaceutical Survey* . . . obviously mere memorization does not prepare one to practice a profession."⁵

To these objectors: I think it is high time we stop trying to be Marlene Dietrichs "seeing what the boys in the back room will have" and start applying some sound educational psychology to our teaching methods. When we see our former students after they have been in practice for several years and they say, "I don't remember this and this and this," we

possibly say to ourselves, "We taught them that." We also may very well ask ourselves, "Did we?"

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Biological Products—The Nature of and Need for This Course*

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How important is a present day course in biological products? In order to answer this question, let us look at what has been happening in the field of biologicals. About a decade ago, the introduction of the modern chemotherapeutic agents caused the use of biological preparations to fall off markedly. In the meantime, however, principally as a result of numerous discoveries in the field of biologicals and because of recent developments in the methods of purification, biological products have been steadily increasing in use; now we should recognize that they have regained their position of importance to the pharmaceutical industry and public health. This fact should prompt one to consider making a course of this type

*Presented at District #7 meeting of AACP and NABP, Seattle, Washington, April 30, 1954.

required in any five-year pharmacy curriculum and given at least as an elective in the four-year program.

The terminology, biological products, is used to designate those products of a complex biological nature resulting from a "life" process and whose use ordinarily depends upon some phase of immunity or upon an antigen-antibody reaction. This entire field of biologicals is today probably larger than most people realize. As of December 1, 1952, there was a total of more than 930 biological preparations marketed by 125 different manufacturers licensed by the United States Department of Health, Education, and Welfare.¹ This figure is in exclusion of the thousands of allergen preparations that are too numerous to count and also the antibiotics of natural origin. When all of these products are combined, they make up one of the largest groups of preparations in the pharmaceutical industry. Moreover, due to the newly found importance of the blood fractions such as gamma globulin, clotting proteins, and serum albumin; the recently developed and probably successful poliomyelitis vaccine; and the fact that some microorganisms have developed a fair degree of resistance to various chemotherapeutic agents, the field of biological products should become even more important than ever before to all concerned. It will become increasingly necessary that a pharmacist have the knowledge of how these preparations are produced, standardized, administered, and understand the theory behind their use. Training directed toward the proper use of biological products in fulfilling public health needs will enable the pharmacist to give the highest quality of professional service that the medical and dental professions, veterinarians, sanitarians, and the general public expect from the pharmacist. This in turn will accomplish much in helping to raise the professional standards of pharmacy—an effect that is deemed quite necessary.

The relative importance of the field of biologicals, however, is not recognized by many of the schools of pharmacy. According to *The Pharmaceutical Curriculum of 1952*² a specific course in biological products is taught in only eleven schools of pharmacy in the United States. It is true that many

of the remaining schools offer variable amounts of the subject matter within the framework of other established courses, such as the consideration of allergens and antibiotics in pharmacognosy, the study of human blood fractions in pharmacology, and the study of diseases in public health. If there is proper coordination, a small amount of decentralization of biological material should prove satisfactory. However, extensive scattering of the material into many other courses cannot accomplish the best results because proper continuity and correlation of the subject matter is lost by such a piece-meal presentation.

Nor can a student receive a sufficient amount of equivalent instruction from a required standard course in microbiology. At best, in an elementary microbiology course, a pharmacy student will become acquainted only with the nature and identity of microorganisms and the diseases they produce. Unless the student takes an additional elective in microbiology such as immunology, serology, or medical microbiology, he just does not receive in one course enough of the background material concerning the important principles of antigen-antibody reactions, protein sensitization, and human blood fractions, as well as a knowledge of and familiarity with all pharmaceutical biological products that are dispensed.

It is my opinion that the problem could be properly solved through the introduction of a single, specialized, three-semester-hour course in biological products which would have as its objective a familiarization with the principles of immunization and the methods used in the production, standardization, and preservation of biologicals, indications for their use and their limitations. No laboratory work should be necessary if the student has previously had a satisfactory laboratory course in the fundamentals of microbiology—this, of course, should be a necessary prerequisite. The other prerequisites should be pharmacognosy, inorganic and organic pharmaceutical chemistry, physiology or zoophysiology, and elementary dispensing. The course would best be placed in the last year of a four-year program and either in the fourth or fifth year of a five-year program.

Since the content of the course is applied in nature, it will naturally overlap into almost all of the areas of pharmacy; therefore, it matters little into which actual area this course is placed. Also, by whom it is taught is of little importance as long as the instructor is sufficiently qualified and places proper emphasis on all aspects of the course material. If there is an occasional duplication with the subject matter of other courses such as pharmacognosy or pharmacology, it should be possible to reach agreement in order that the material may be handled from different points of view and in different relationships.

The most widely used proprietaries or specialties and the official biological preparations that are associated with the prophylaxis, treatment, or diagnosis of each of the diseases studied should be introduced into the lecture material. These products should not be studied with the idea of requiring a rote memorization of numerous details, but merely that each student should obtain an over-all familiarization with this type of product. The following points should be covered for each of the products considered: method of manufacture, use and mode of action, usual dose and route of administration, any specialized handling and storage, and any precaution, complication or contraindication for use.

The familiarization of the students with these products is very important not only because it will make dispensing easier, but it will impress upon the student a need for understanding the fundamentals that industrial research and production must routinely employ. Moreover, as is true in any course in proprietaries, the introduction of similar specialties by different manufacturers serves to point out the keen competition that is always present in the pharmaceutical industry and how this competition forces all manufacturers to conduct endless research in order to keep their particular products at the top of the field. The use of the specialties will also serve to make the course more interesting to the students because each student will feel that he is up to date with the drugs of the present. Naturally, there must be a limit to the number of drugs studied since there would not be time for all to be in-

cluded, and because these items may change markedly in importance in a relatively short time. However, the attempt should be made to correlate as many actual products with the diseases studied as possible.

Given below is a suggested syllabus for the proposed specialized course in biological products. It is probably outlined in more detail than is necessary, but since there are so few schools offering a course of this type, the extra length may be justified. This syllabus may also be either lengthened or shortened by the addition or omission of various diseases that are not common to any particular geographical region of the United States. However, this should be done with caution and diseases of foreign origin should not be omitted entirely since modern air travel can enable such diseases to spread over great distances very rapidly.

Syllabus

1. Introduction and definition of fundamental microbiological & immunological terms.
2. General consideration of infection and sterilization.
3. Natural defensive mechanisms
 - (a) Phagocytosis
 - (b) Antigen-antibody reactions
 - (1) Antigenic structure of bacteria
 - (2) Types of antigens and antibodies
 - (3) Sites and theories of formation
 - (4) Rates of production
 - (5) Specificity and forces of union
 - (6) Anaphylaxis
 - (a) Types and sites
 - (b) Causes and mechanism
 - (7) Diagnostic and titer tests
 - (a) Agglutination
 - (b) Precipitation
 - (c) Flocculation
 - (d) Complement-fixation
 4. Classification of immunity.
 5. General consideration of biological products.
 - (a) Federal controls, license, records, labeling, preservatives, etc.

6. Individual bacterial diseases

- (a) Consideration of etiological agents, biological products, and chemotherapeutic agents
 - (1) Diphtheria
 - (2) Tetanus, Gangrene, and Botulism
 - (3) Pertussis
 - (4) Pneumonias
 - (5) Streptococcus infections
 - (6) Micrococcus (Staphylococcus) infections
 - (7) Meningitis
 - (8) Typhoid and Paratyphoid
 - (9) Dysentery
 - (10) Haemophilus influenzae infections
 - (11) Brucellosis
 - (12) Tularemia
 - (13) Plague
 - (14) Cholera
 - (15) Anthrax
 - (16) Colon Bacillus infections
 - (17) Spirochaeta infections

7. Classification and characteristics of Virus

- (a) Individual diseases, biological products, and chemotherapeutic agents.
 - (1) Smallpox
 - (2) Rabies
 - (3) Yellow Fever
 - (4) Mumps
 - (5) Measles
 - (6) Influenza
 - (7) Poliomyelitis
 - (8) Common Cold
 - (9) Encephalitic infections
 - (10) Equine Encephalomyelitis

8. Classification and characteristics of Rickettsia

- (a) Individual diseases, biological products, and chemotherapeutic agents.
 - (1) Rocky Mountain Spotted Fever
 - (2) Typhus Fever (murine and epidemic)
 - (3) Scrub Typhus
 - (4) Q Fever
 - (5) Psittacosis
 - (6) Lymphogranuloma Venereum

9. Fungi infections and products.

10. Poisonous snake and insect bites, venoms, and biological therapy.

11. Protein sensitization
 - (a) Hypersensitivity
 - (b) Desensitization
 - (c) Allergens
 - (1) Importance of case history
 - (2) Allergic extracts
 - (a) Preparation
 - (b) Assay
 - (c) Diagnostic skin tests
 - (d) Use
 - (d) Allergic conditions
 - (e) Proteins for diagnostic use
 - (f) Non-specific protein therapy
 12. Tuberculosis, Tuberculins, and B.C.G.
 13. Human Blood Fractions
 - (a) Fractionization procedures
 - (b) Blood products (clotting proteins, etc.)
 - (c) Blood antigens and antibodies (typing, Rh, etc.)
 14. Bacteriophage and phage-containing products
 15. Antibiotics (biological consideration)
 - (a) Microbiological origin, potency, sensitivity tests, and uses.
 - (1) Penicillin
 - (2) Streptomycin and Dihydrostreptomycin
 - (3) Aureomycin and Achromycin
 - (4) Chloramphenicol
 - (5) Terramycin
 - (6) Bacitracin
 - (7) Tyrothricin
 - (8) Tyrocidin
 - (9) Gramicidin
 - (10) Polymyxin B
 - (11) Subtilin
 - (12) Neomycin
 - (13) Erythromycin
 - (14) Carbomycin (Magnamycin)
 - (15) Viomycin
 - (16) Fumagillin
 - (17) Pleocidin

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The Drug Store Owners of the United States can Solve the Problem of "Shortage of Pharmacists"

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For the past four or five years we have frequently heard discussed in various drug group meetings, the acute shortage of registered pharmacists in different sections of the country.

Several days ago it was my privilege to attend a legislative committee meeting of our state association; present at this meeting, in addition to the legislative committee, were—the executive committee of the state pharmaceutical association, the deans of the four pharmacy colleges located in our state, and the membership of our state pharmacy board. I was impressed with the high calibre of the men present who were giving freely of their time to the best interests of all phases of the drug industry, and I had the feeling matters pertaining to the profession of pharmacy were in most capable and trustworthy hands.

There was brought up for discussion the acute shortage of "Registered Pharmacists," the reasons for the same, and how this problem could best be solved.

One of the pharmacy board members pointed out that the men who operate multiple drug store units could very materially help solve this problem along with the independent druggist, by an intelligent recruitment program at the high school level; for example;—he cited a conversation with a multiple store operator who complained he had been advertising over the state in various newspapers for registered pharmacists without receiving an applicant. The pharmacy board member asked—"How many young men, juniors or seniors in high school, do you have in your employ who have signified their desire to study pharmacy and make it their

*Dr. Rea is a graduate of the Philadelphia College of Pharmacy and Science. He is the president of Rea and Derick, Inc., a retail drug company that operates stores in central Pennsylvania. He is a past president of the National Association of Chain Drug Stores. This manuscript was furnished the Editor by Dr. Paul C. Olson.—Ed.

chosen profession?" The president of this company said they had quite a number, but he would check and let him know. Sometime later he advised this board member—and his face was just a little red—he checked and found in over thirty (30) stores they had only one young man working in one of their stores who signified his intention of studying pharmacy. Dramatically it opened his eyes and today this executive has in his employ over twelve (12) young men of high school age.

We operators of drug stores in the United States must be realistic and unselfish in this recruitment program and realize that not all the young men and women to whom this preliminary training is given, will all come back with you and work in your store as a registered pharmacist. The greater majority will become registered pharmacists, while a certain percentage will enter the employment of pharmaceutical manufacturers, do detail work, while others will enter the field of hospital pharmacy, and others in the teaching profession in the various colleges and universities.

At this meeting the deans and committee members were presented with the booklet—"Shall I Study Pharmacy," edited by Professor R. A. Deno, of the University of Michigan College of Pharmacy, Ann Arbor, Michigan, and who is Secretary of the American Association of Colleges of Pharmacy, by whom this booklet was prepared and published, and which is very well written.

The purpose of this booklet—"Shall I Study Pharmacy," is to present the same to high school principals and vocational guidance teachers in the various high schools, private and parochial schools in each state, to distribute to prospective pharmacy students. These booklets cost \$20.00 per hundred. We checked with the department of public instruction and found there is located in Pennsylvania—1076 public high schools, 250 private and parochial schools of high school standing, or a grand total of 1326 high schools in Pennsylvania.

The state pharmaceutical association agreed to write a letter to each of our state high school principals and vocational guidance instructors, and to mail from two to six book-

lets to each high school in the state, providing five or six thousand such booklets were supplied the state association; this was agreed upon and the distribution of these booklets should be helpful in a recruitment plan for young men and women to make pharmacy their chosen profession.

We in the retail drug business, both independents and multiple store operators, can very readily solve this "Shortage of Pharmacist" problem, by adopting the following program:

1. If each independent drug store owner who is a registered pharmacist, and every multiple store manager, with the approval of headquarters, would contact their various high school principals and vocational guidance teachers, and request them to supply the names of one or two outstanding young men who are juniors and seniors in high school, and to refer them to that particular drug store for an interview.
2. This drug store owner or manager would act as this young man's preceptor during his pre-training days, or detail a good registered pharmacist to serve in that capacity. Have a heart to heart talk with the boy and advise him that you will personally take an interest in him and give him an all around training, even starting him on the soda fountain, if you have one; then after a period of time transfer him from one department to another, finally ending in the drug and prescription department; that you will be patient with the boy and give him all the aid, help and training you possibly can, previous to his graduation and enrollment in a reputable college of pharmacy of his own choice.

I must honestly confess that our own company have been somewhat lax in establishing such a plan, whereby we would definitely instruct our store managers to employ only young men, or young women, who were interested in pharmacy and wish to make pharmacy their chosen profession, and then carry through this pre-training program.

We have had for a number of years a student loan fund, whereby young men and women were given financial assistance during their pharmacy college courses, however, we have been lax in a recruitment program, as already outlined, and we intend, in our own company, to solve our own problem by carefully selecting from the various high schools, young peo-

ple of good moral character, aptitude and integrity, whom we feel would be a credit to our profession.

It is my honest opinion that if every drug store in the United States operating a prescription department, independent or multiple store operator, were to adopt such a program in co-operation with the deans of the various pharmacy colleges, and work with the local high school principals and vocational guidance counsellors, the profession of pharmacy would be greatly enhanced—thus solving the "Shortage of Pharmacists" problem in a practical manner.

The Midshipman Cruise on the U.S.S. Macon

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The 1953 Midshipman Cruise, designated by our Navy as Cruise Able, left Norfolk, Virginia, on Monday, June 8 about 2 p. m. The fleet, designated as a "task force" by certain of the officers, was composed of about 30 ships and included the battleships the "Mighty-Mo," the Wisconsin, the aircraft carrier Saipan, the heavy cruisers Albany and Macon together with several tankers, destroyers and auxiliaries. During the trip South after crossing the equator we were joined by a submarine which accompanied us several days.

This cruise to Santos and Rio de Janeiro, Brazil (with about half of the fleet going to each port) was planned to give 1700 midshipmen from Annapolis and 1400 midshipmen from various NROTC units actual experience at sea; and to supply an opportunity for them to put into practice some of the basic fundamentals taught at the various colleges, the Naval Academy, and in classes held while on the cruise. While enroute at

*Dean E. L. Hammond's cruise aboard the U.S.S. Macon was a part of the Navy's program to give university administrators and faculties first-hand acquaintance with the ramifications of our far flung naval operations. This article was written at the Editor's request and publication in *The Journal* was given Naval approval.

sea instruction was given daily except Sundays. Instruction given by regular officers of the U.S.S. Macon was supplemented by instruction given by additional officers assigned for the cruise from the Academy and also from the NROTC units. The midshipmen were divided into groups for instructional purposes with those from NROTC units and those from the Academy purposely intermingled. Instruction was given in navigation, engineering, gunnery, etc. There were three phases of instruction of approximately equal length with the groups being rotated.

There were 18 civilian guests (without expense to the government), nine of whom were representatives of universities having NROTC units and nine were representatives of the press. The Macon carried only two civilian guests, of which I was one. There were six on the Albany and ten distributed among the battleships and the aircraft carrier. It is my opinion, as one who had access to nearly all parts of the ship and who did make observations at will, that instruction was highly efficient. I was also impressed with the large percentage of exceptionally intelligent midshipmen and with their attitude and seriousness of purpose toward their studies and their future careers.

All ships of the fleet made three ports of call. The first, for the Macon, was Santos, Brazil, where we docked opposite warehouses 20 and 21. The second port of call was Barbados, B. W. I., and the third was Guantanamo, Cuba, which was a port of call for all ships of the fleet. We had four days at each of the last two ports, and since dock facilities were not available, we anchored in the harbors and went ashore and returned to the ships by motor launches. While the Macon and the Aucilla were anchored for four days in the harbor at Bridgetown, Barbados, some ships of the fleet visited Colon, Panama; others Cartagena and Barranquilla, Colombia; Trinidad; and Curacao.

When crossing the equator on the trip South, hundreds of "pollywogs" were converted to "shellbacks" in accordance with the procedure and initiation outlined in Mr. Lovette's *Naval Customs, Traditions and Uses*. The initiation procedure

and the custom of observing the Crossing of the Line Ceremony have come down to us from before the time of the Vikings, Angles, Saxons and Normans.

Among other mementos of the trip, I highly prize the booklet of 25 photographs showing activities of Neptunus Rex and the Royal Court on the Macon. There are framed and hanging in a group on one wall of my office (1) a certificate properly signed and sealed to indicate that on the 19th day of June, 1953 on the Macon enroute to Santos, Brazil, "having been found worthy to be numbered among the Trusty Shellbacks," I was initiated into the Solemn Mysteries of the Ancient Order of the Deep. (2) a photograph of Captain Richard W. Smith of the Macon, (3) a photograph of the U.S.S. Macon and (4) a photograph titled "Dr. E. L. Hammond takes joy-ride in boatswain's chair". This letter refers to a trip via high-line from the Macon to the U.S.S. Sabine and return on July 14, while both ships were underway at several knots.

Such transfers of passengers from ship to ship while underway were made on numerous occasions. Ill members of the personnel of other ships not having ample sick-bay facilities were transferred to the Macon where we had an air-conditioned sick-bay with a physician, a surgeon, a dentist and other Medical Corps personnel. At other times transfer of a physician or surgeon was made to other ships in order that he might examine patients. Enroute North we were visited by a Navy supply ship, (as were other ships of the fleet) and with the use of three high-lines, more than 100 tons of supplies were transferred to the Macon in less than two hours. On several occasions the Macon was fueled while underway at sea. This is an interesting operation, the fuel oil being pumped from the tanks of one ship to those of another through black rubber hose lines six inches in diameter. One time, while we were receiving fuel oil through two such lines from a tanker, we were at the same time fueling a third ship while all three ships progressed together side by side from 100 to 150 feet apart, and traveling forward at the same speed. I understand that the matter of transfer of fuel, passengers

and freight, at sea, while underway, was developed during the days of World War II.

The trip from Norfolk to Santos required 19 days. While there officers and men were entertained by the American Society of Sao Paula and other groups. During this time I made two bus trips from Santos to Sao Paulo and return and spent three days in Sao Paulo visiting Mr. and Mrs. Herschel Dalton, friends who formerly lived in Memphis, Tennessee. While in Sao Paulo I visited a branch of Eli Lilly and Company, spent one day at the Firestone Tire and Rubber Company plant, and visited the Butantan Snake Farm and the exhibits of Exposicao Industrial celebrating the 4th Centenario de Santo Andre' da Bordo do Campo. Readers of this journal may be interested to know that I visited the Universidade de Sao Paulo Faculadade de Farmacia e Odontologia. While there I had a brief but interesting visit with the well-known Pharmacognacist, Herr Professor Richard Wasicky of that faculty, formerly of Europe and author (with co-workers) of "Leitfaden fuer die Pharmakognostischen Untersuchungen im Unterricht und der Praxis".

From Sao Paulo I flew to Rio de Janeiro and return via Panair do Brazil, S. A. In Rio I visited Colegio Anglo-American. My civilian shipmate, Dr. A. T. "Jack" Matthews, Dean of Students at the University of Missouri, and I were conducted through this institution by Senhorita Yara Lopes Vargas, Government Supervisor and niece of President Vargas of Brazil. In Rio we stayed at the Hotel Excelsior on beautiful Copacabana Beach and enjoyed a before breakfast swim in the waters of the South Atlantic. Among points of interest we saw Corcovado Mountain with the statue of Christ on the summit (altitude 2300 ft.). We visited the Botanical Garden with its avenue of palms and rode the aerial cable car to the top of Pao de Azucar (Sugar Loaf Mountain). One of my prized Kodachromes was obtained by making a 12-minute exposure of a view of the city of Rio and harbor at night from the summit of Sugar Loaf Mountain (altitude 1300 ft.). Another prized Kodachrome is a view of Sugar Loaf taken

through a window of the plane as it ascended from the air port when we were leaving Rio.

Barbados, most Eastern tropical island of the British West Indies, is often referred to as Little England. It has been under British rule more than 300 years. In Bridgetown, the capitol, the main street extends from Trafalgar Square with a statue of Lord Nelson to Beckwith Place. This gives the city a flavor of old London town. During the four days that the Macon was anchored in Carlisle Bay, we visited the main points of interest in the city, spent some time at the Aquatic Club, the Y.M.C.A. and the Yacht Club. We were treated to the delicacy of fried flying fish at noon luncheon at the Y.M.C.A. by the Secretary, Mr. Williams. Barbados is second only to Mandalay for flying fish. Another day we made a partial tour of the island in a British-made Ford sedan with Lt. j.g. McEneaney and his sister, Mrs. Ralph Gibson, from Trinidad. On this day we had dinner at Sam Lord's Castle, a famous old residence of pirate days on the East coast. At a tea dance held on the Macon, I met Major and Mrs. Noot. The Major, a former British Army officer, is headmaster of the Cumbermere School of Bridgetown. He became interested as to how and why civilians were guests on a Naval vessel, and this led to an invitation from him and Mrs. Noot to dinner at their home. Dr. Mathews and a midshipman were also guests on this occasion, and we dined sumptuously on numerous delicacies, one of which was flying fish roe pie. One bright moonlit night while at Barbados, I went on a fishing trip with several warrant officers and two dark-skinned natives in a sail boat rented from the natives. I was impressed by the fact that Barbadian natives spoke almost perfect English which is very pleasant to listen to.

At Guantanamo Bay, Cuba, officers and civilian guests of the fleet were entertained by the Commander of the base, Rear Admiral Atkeson and Mrs. Atkeson in honor of Rear Admiral E. T. Wooldridge, Commander of the Battleship-Cruiser Force, U. S. Atlantic Fleet. We were at Guantanamo four days and had ample opportunity to see the entire layout of this \$60,000,000 Naval base.

The U. S. Navy Honorary Service Record, presented to me with due ceremony at a Smoker held on the Macon enroute from Guantanamo to Norfolk, shows that I was transferred for temporary duty on board the U.S.S. Wasp for the duration of one day, July 31, 1953. On this vessel, which is one of the large aircraft carriers, we saw numerous jet planes catapulted from the deck to take part in a mission. The mission having been completed, they returned to the flight deck, each dropping its "hook" and being restrained from proceeding too far by cables crossing the surface of the deck. On both the Macon and the Wasp, we had ample opportunity to observe various types of gunfire practice, including anti-aircraft firing with three and five-inch guns. On the Macon we saw and heard practice with eight-inch guns fired at a target about nine miles distant, towed in the water at the end of a cable by a small ship. Earlier, while at sea enroute to Brazil and return, there were many times when gun firing practice was held, also practice of firing at drones, and at other times at nylon socks on the end of a cable towed through the air by a plane. My civilian shipmate and I were invited to sit in at the time the pilots of the jet planes were being briefed prior to carrying out their mission. This meeting was held several decks below the flight deck in an air-conditioned class room. The officers' dining room and ward room on the Wasp were also air conditioned. Aboard the Wasp we were surprised to find an escalator which is used to transport the jet pilots to and from the flight deck and the briefing room so that dressed in their flying suits, oxygen helmets and other heavy gear, they will not become overheated by having to climb stairways. The Wasp also has three elevators for transporting planes to and from the flight deck. I relate this to indicate the extent to which the Wasp has been modernized and the efficiency with which a carrier and its personnel are required to function.

When the fleet returned to Norfolk on August 4, we had steamed more than 13,000 nautical miles. The ports of Santos and Rio had been visited for eight days by the largest fleet of U. S. Naval ships to visit Brazil in almost a half century. The

midshipmen had been afforded an opportunity to study the cultural background of a friendly people and to foster better relations between the U. S. and Brazil, as well as between the U. S. and the peoples of the various Caribbean ports visited by the different ships of the fleet. The civilian guests had enjoyed about eight weeks with Navy personnel at sea and ashore and had acquired useful knowledge of the Navy at work and on liberty. They returned to their respective homes and regular civilian duties with memories and mementos of a cruise long to be remembered.

Budget Allotments for Faculty Travel and Research

DAVID W. O'DAY

College of Pharmacy, University of Wyoming

Over a year ago a Committee on Research and Travel* from the University of Wyoming Chapter of Sigma Xi prepared a questionnaire designed to make a study on research and travel at a selected group of colleges and universities in the United States.

In carrying on this study, this questionnaire was sent to the presidents of twenty-six universities and colleges.

It was stated on the first page of the questionnaire that the information desired was relative to faculty personnel who are nominally devoting their time primarily to teaching and it was suggested that the person completing the questionnaire exclude the following categories:

1. Agricultural research for which income is derived from Federal sources, and the personnel on a full time research basis paid from such grants;
2. Agricultural extension service travel;
3. Travel funds of administrative officers, i.e., president, deans, registrars, etc.

*The Committee: Dr. D. W. Blackstone, Jr., professor of geology; Dr. Robert H. Bruce, dean of the graduate school; Dr. Reed W. Fautin, associate professor of zoology; Dr. Harold S. Sweet, professor of civil engineering; and Dean David W. O'Day, chairman.

Twenty of the questionnaires circulated to these institutions and colleges were filled in and returned. Upon reviewing these completed questionnaires, the committee believes that in some instances this request to limit the information to faculty personnel who are nominally devoting their time primarily to teaching was not followed. Nevertheless, some pertinent data was obtained which was used in preparing a report on travel and research funds to the Wyoming Chapter of the Society of Sigma Xi. Interesting points which were covered in this report are furnished in this paper under three titles: Travel to Attend Meetings of Scientific and Professional Societies; Recognition of Research in the Academic Program of the University; Availability of Funds for Research.

Travel to Attend Meetings of Scientific and Professional Societies

The report showed that Travel Funds for faculty members are provided at all of the institutions replying to the questionnaire. These funds are allocated throughout the institution by a college or department in thirteen cases; by a faculty committee at four universities; or directly to the individual faculty member by the administration at three universities. At one university a faculty committee advises the administrative officer concerned. The allocation of funds is limited to those individuals appearing on the meeting program or serving as officers of the organization at seven universities. Restrictions are placed at four institutions of the nature of one grant per year, or two per three years. At nine institutions no definite restrictions are established and participants in the travel funds are determined at the discretion of administrative officers or a faculty committee.

The portion of expenses paid varies from "all" in four cases to the payment of fixed amounts depending on length of trip. Only first class railroad fare (or air fare) is paid at six institutions; at one of these, only coach fare is allowed unless the recipient is a program participant. At seven schools the amount is variable, usually with all expenses paid for program participants and lesser amounts allocated in other circumstances.

Total amounts available in faculty travel funds varied from \$5,000 to \$72,000 at the sixteen schools answering this question. Reducing this to take into account the number of faculty eligible to receive funds, the amount per person varied from \$14.30 to \$60.00.

Recognition of Research In the Academic Program of the University

It was reported by fifteen of the institutions that the teaching load of a staff member is reduced when he is actively developing or carrying out research; the answer was "no" in the other four cases. Eighteen replied that teaching loads were adjusted for advising and directing of graduate research projects; no answer was given to this question by the other institutions. In reply to the question as to whether research is considered an optional item with the individual to be carried along with his teaching load, thirteen answered "yes" while three institutions indicated research functions as well as teaching functions are expected of all members of the faculty. In several other cases, it was stated that research activities were urged and encouraged.

Availability of Funds for Research

Eighteen institutions furnished answers to all or part of this section. All stated that funds were available to faculty personnel for research. At eight of these universities, research funds are furnished to departments to be allocated within the department. Individuals receive grants-in-aid from a general research fund at sixteen schools.

This report is being published because of an expressed interest in the results of the study by many of those administrators who completed questionnaires.

A table summarizing the information, with the exception of the names of the universities concerned, has been prepared and is available for those who are interested in studying this report more carefully.

A Survey of Pharmacognosy*

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Several years have passed since the American Council on Education completed its *Pharmaceutical Survey* and published its *General Report*.¹ That portion of the *Report* related to pharmacognosy has been elaborated upon by Blauch and Webster² in their book, *The Pharmaceutical Curriculum*. These authors indicate that the subject of pharmacognosy as taught in many schools of pharmacy at that time was in need of revision, and it criticised, among other things, the pursuit of specialized phases such as taxonomy and histology. It recommended a new point of view emphasizing the physiological importance of drug constituents, the correlation of these aspects to organic synthesis, and the relationships between plant and animal constituents.

In order to determine what effect the *Report* has had on the teaching of pharmacognosy, a series of questions was sent to 72 accredited colleges of pharmacy in the United States. Replies from 67 colleges were received. Such an excellent response is indicative of a great interest on the part of teachers of pharmacognosy in behalf of their subject. Many teachers volunteered additional information which has been most helpful in the writing of this survey. I wish personally to thank them for their cooperation.

A few general remarks concerning this survey should be made. A total of 21 questions were asked with special emphasis on the time allotted to the subject, to course content, and to methods of presentation. Through the years these questions have predominated in many discussions related to the teaching of pharmacognosy.

The answers and comments received from several of the colleges of pharmacy have indicated that changes are being made or are contemplated for next year. This survey does not consider any contemplated changes, but it is certainly indica-

*A contribution of the Committee on Problems and Plans. Read by request before the Section on Education and Legislation, APhA, at the 1953 meeting, Salt Lake City.

tive that the teaching of pharmacognosy is in a transitional stage at some schools. Most of the proposed changes are concerned with a reduction in time for the required course work, with changes in the method of presentation, and with the establishment of elective and graduate courses.

It is hoped that in addition to presenting the picture of pharmacognosy instruction as it exists today, this survey will be helpful to teachers in evaluating their own course structure. At least it can serve as a basis for comparison, and possibly as a source of information and ideas with revision in mind.

All 67 of the colleges of pharmacy participating in this survey reported pharmacognosy in their curricula. The tendency is to include all of the required pharmacognosy work in one general course (53 schools), usually during two semesters for one year. The titles most commonly employed are "Pharmacognosy", "General Pharmacognosy", and "Practical Pharmacognosy". In 12 schools the subject matter is divided into separate courses. The following list represents the names of the related courses other than general pharmacognosy, which are sometimes required of all students. The figures indicate the number of colleges requiring the course.

Vegetable Drug Histology and Microscopy	7
Biological Pharmacognosy	6
Insecticides, Fungicides, Herbicides, Rodenticides	3
Antibiotics	2
Drug Collection and Medicinal Plant Study	1
Identification and Medicinal Properties of Vegetable Drugs	1
Hormones and Glandular Products	1
Serums, Vaccines, Allergens	1

In determining the credit hours allotted to pharmacognosy, the problem is confusing since all colleges do not employ the same system of determining credit hours. Some colleges have the point system, others the quarter hours credit system, and others the term credit system. The following figures represent those obtained only from colleges which use the semester hours credit system. When so computed, they range from 3 to 15 total semester hours credit. The average of 58 colleges is 6.8. The total clock hours of didactic teaching and of laboratory work for all colleges was computed. With

respect to the didactic work the range was from zero to 240, the average being 83. The laboratory work ranges from zero to 192, the average being 80. The *Report of The Pharmaceutical Survey* has suggested that the course in pharmacognosy should carry 8 semester hours of credit (64 hours of didactic instruction and 192 hours of laboratory work). It might be noted that 47 colleges consider the time which they now allot to pharmacognosy adequate, 19 consider it too little, and only one considers it too much.

The teaching of plant anatomy to pharmacy students has been a subject of discussion for a number of years. This survey shows the colleges of pharmacy to be almost equally divided as to where it should be taught. Twenty-nine colleges include it in the regular pharmacognosy course work while 34 colleges treat it separately, either as a special course or, more commonly in the general botany. One college of pharmacy considers it only in the laboratory.

Another subject for controversy which has plagued teachers of pharmacognosy is the course content, particularly that portion which might be considered of a specialized nature. In order to determine how the 67 colleges are dealing with this matter, a total of 15 specialized topics were surveyed. Following is the result of that survey with the topics listed according to their frequency of occurrence. The number after each topic indicates the number of colleges where the topic is considered in the required pharmacognosy course work.

Antibiotics	50
Insecticides	41
Vitamins	38
Allergenic Products	32
Herbicides	32
Fungicides	31
Rodenticides	31
Vaccines	31
Allergenic Plants	30
Antitoxins	29
Serums	29
Economic Products Other Than Drugs	24
Prescription Specialties	21
Chlorophyll	18
Poisonous Plants	17

It would seem that on the average about one-half of our colleges of pharmacy treat the specialized topics listed above in the required pharmacognosy course work. Blauch and Webster have suggested that such material might be taught in elective courses. This is the case in a number of schools. Elective courses in pharmacognosy are offered in 31 out of 67 colleges of pharmacy. The following list represents the exact titles of all the elective courses submitted in this survey. No attempt has been made to change the titles so there undoubtedly is a duplication of subject material. They are listed according to their frequency of occurrence.

Histology and Microscopy of Crude Drugs	14
Special Problems in Pharmacognosy	9
Advanced Pharmacognosy	8
Insecticides, Herbicides, Pesticides	3
Commercial Pharmacognosy	3
Research in Pharmacognosy	3
Antibiotic Drugs	3
Seminar in Pharmacognosy	2
Economic Biology	2
Field Pharmacognosy	2
Medicinal Plants	2
Phytochemistry	2
Advanced Microanalysis	1
Drug Plant Principles	1
Advanced Drug Detection	1
Distribution of Drug Plants	1
Animal Health Products	1
Taxonomy of Medicinal Plants	1
Hay Fever Pollens	1
Biological Products	1
Drug Plant Analysis	1
Plant Physiology	1
Medicinal Plants of Utah	1
Pharmacognosy Conference	1

An interesting point concerning this list of electives is the relatively large number (14) of colleges which place microscopy on an elective basis.

The identification of whole crude drugs, of powdered drugs, and of histological sections has long represented an important phase in the study of pharmacognosy. In order to determine if any change has taken place in this classical approach, each school was asked to estimate the number of

crude drugs, of powdered drugs, and of histological sections which the student is required to identify. The results of this survey are summarized in Table I.

TABLE I

	Colleges not requiring identification	Colleges requiring identification	Estimated average number
Crude drugs	11	56	118
Powders	17	50	38
Histological sections	25	42	25

Although no previous figures of a similar nature are available, it would seem that there has been a lessening of emphasis on crude drug identification studies. This tendency is in agreement with Blauch and Webster who state that limitations should be placed upon the study of the anatomy of drugs and of drug plants.

Another classical aspect to the study of pharmacognosy has been the requirement that students learn the official definitions of drugs. This survey shows that 13 schools of pharmacy have no such requirement. A few others require the student to learn only portions of the definition, particularly the part used, while the remaining colleges require the learning of the entire definition. The number of drug definitions varies from 20 to 300, the average being 120.

The question as to whether the pharmacognosy student should be required to learn doses is also a controversial one. Some teachers maintain that posology belongs in the realm of pharmacology. This survey shows that 23 colleges of pharmacy do not teach doses in the pharmacognosy courses. Many of the remaining colleges which do, have set up criteria for the selection of doses which students are required to learn. Most colleges consider only those which are official in the USP or NF, others only those official in the USP, and a small number only those doses below 60 mg. The average number of doses considered in the pharmacognosy courses of 44 colleges of pharmacy is 140.

With a lessening of emphasis on the botanical phases of pharmacognosy, coupled with an increase in knowledge and

interest in chemical constituents of crude drugs, it is only natural that the laboratory work should reflect that change. This survey shows that 53 colleges of pharmacy include the teaching of microchemical methods in the laboratory while only 14 do not.

It would seem that proper facilities for the growing of medicinal plants for class room demonstrations and for studies in plant chemistry would be a valuable asset to any college of pharmacy. This survey shows that 23 of the 67 colleges of pharmacy do maintain facilities for these purposes, either as greenhouses or as medicinal plant gardens.

Because of the increasing trend toward a biochemical approach to the subject of pharmacognosy, it would seem necessary that the student should have some knowledge of organic chemistry in order to understand the chemical nature of plant constituents. Accordingly, this survey includes a study of where in the pharmacy curriculum organic chemistry is being taught. A similar survey was made of microbiology (bacteriology). It would seem that the majority of the colleges of pharmacy agree that organic chemistry should be taught prior to pharmacognosy. The results are summarized in Table II, and indicate whether organic chemistry and microbiology are taught prior to, concurrent with, or subsequent to the required course in pharmacognosy.

TABLE II

	Prior to pharmacognosy	Concurrent with pharmacognosy	Subsequent to pharmacognosy
Organic chemistry	40	22	5
Microbiology	22	19	23

The majority of teachers of pharmacognosy require a textbook for their course work. Only 3 do not, while at one institution the selection of a textbook is optional with the student.

The following textbooks of pharmacognosy are in use in our colleges of pharmacy at the present time. The number after each title represents the number of colleges of pharmacy using that particular book: *A Textbook of Pharmacognosy* by

Heber W. Youngken, Sr., 27; *Pharmacognosy* by Robertson Pratt and Heber W. Youngken, Jr., 25; *Pharmacognosy* by Edmund N. Gathercoal and Elmer H. Wirth, 8; *Textbook of Pharmacognosy* by George E. Trease, 1; N. M. Ferguson's book, now in publication, 1.

In a subject such as pharmacognosy which admittedly is diversified in scope, it is not surprising that there should be a wide difference of opinion as to the best system of drug classification. Blauch and Webster have pointed out the advantages and disadvantages of the various systems of classification in use today. Interest in the chemistry of drug constituents has again proved influential among teachers of pharmacognosy. This survey shows that the biochemical approach is taught at 26 colleges of pharmacy, followed by the taxonomic (11), the therapeutic (8), the physiological (3), and the morphological (1). Other schools apparently do not consider any one system ideal and have chosen to combine two or more of the foregoing systems. Thus we find the following combinations.

Taxonomic and biochemical	3
Physiological and biochemical	3
Therapeutic and biochemical	2
Morphological and biochemical	2
Physiological and therapeutic	2
Morphological and taxonomic	1
Physiological, therapeutic, and taxonomic	1
Physiological, biochemical, and taxonomic	1
Morphological, biochemical, and therapeutic	1

It might be of interest to know what type of courses related to pharmacognosy our graduate schools are offering. Graduate work is taught in 27 of the colleges of pharmacy surveyed. In general graduate studies follow the same lines as those outlined under electives i.e., specialized training in the fields of microscopy, taxonomy and plant chemistry. The following list enumerates all of the graduate courses without change in title. The number following each title represents the number of colleges of pharmacy which include the course in their graduate curricula. Undoubtedly some duplication of subject matter can be detected.

Microscopy of Foods and Drugs (Technical Microscopy)	12
Special Problems	11
Advanced Pharmacognosy	10
Plant Chemistry	6
Seminar	5
Microanalytical Pharmacognosy	3
Drug Plant Analysis	3
Taxonomy of Higher Plants	3
Plant Physiology	3
Economic Biology	2
Biologicals	2
Advanced Plant Anatomy	2
Drug Plant Cultivation	2
Drug Plant Principles	1
Advanced Drug Detection	1
Methods in Pharmacognosy	1
Biosynthesis	1
Pharmacognosy Literature	1
Plant Microtechnic	1
Applied Pharmacognosy	1
Microscopical Control Methods	1
Allergenic Plants	1
Economic Pharmacognosy	1
Survey of Official Plant Drugs	1
History of Plant Drugs	1
Commercial Pharmacognosy	1
Antibiotics	1
Quantitative Pharmacognosy	1

It has been the purpose of this survey to present the facts relative to a number of questions which pharmacognosy teachers are continually asking themselves. It is hoped that, supplied with information obtained from 67 colleges of pharmacy, some of these troublesome questions can be answered. It is beyond the scope of this survey to make suggestions for the teaching of pharmacognosy. One definite observation can be made, however, from this survey. Pharmacognosy is in a stage of transition. This transition is following those recommendations set forth in the pharmaceutical curriculum which, in general, de-emphasizes the botanical aspect of pharmacognosy and emphasizes the biochemical phase.

Several points can be enumerated to prove this statement.

1. The tendency to teach plant anatomy separately from pharmacognosy, most usually to restrict it to the general course in botany.

2. The relatively large number of schools which do not require the identification of crude drugs, powders, and microesopic sections of crude drugs.
3. The relatively large number of schools which now teach microchemical methods in the laboratory.
4. The large number of schools now using the biochemical system of classification.
5. The tendency of many schools to teach microscopy, taxonomy, drug detection methods, and specialized aspects of pharmacognosy in elective and graduate courses.

It will be interesting to note how a similar survey made in 5 to 10 years from now will compare with this one carried out in June, 1953.

References

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Correlation of Pharmacognosy and Pharmacology*

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Although pharmacognosy is one of the oldest of the time-honored pharmaceutical disciplines, teachers of this subject have been slow to recognize the change which has occurred in pharmaceutical education and in the historic functions of

*Presented at the 1953 Seminar on Pharmacognosy at Salt Lake City.

the pharmacist. As a result, pharmacognosy, as taught in some schools, has been left so far behind that some educators have questioned its position in the pharmaceutical curriculum, whereas others have suggested that this fundamental science be "patched up" with such odds and ends as insecticides, fungicides, herbicides and rodenticides. Still other educators have claimed that the basic defect in pharmacognosy resides in the classification employed by the instructor in presenting the course material. Some pharmacognosists favor a taxonomic classification; others prefer either a phytochemical or a physiological classification.

In the final analysis one must admit that this science, if revised to suit the needs of present-day pharmacy, has a definite and important position in pharmaceutical education. Although it must be granted that insecticides, fungicides, herbicides, and rodenticides may rightfully belong in pharmacognosy, there is already such an abundance of material in this subject that its proper organization and economic presentation offers a definite challenge to the teachers of this discipline. Moreover, if the instructor in pharmacognosy makes a serious effort to blend this subject into the overall training of the pharmacist, it makes little difference, in the writer's opinion, which classification is employed in presenting the material.

There are two major criteria which determine whether a course in pharmacognosy is a dynamic, useful, pharmaceutical discipline correlating well with pharmacology and other major divisions in the pharmacy curriculum or is a static course comprising a memorization of myriads of facts. The first factor involves the careful selection of the drugs and the second is concerned with emphasizing that material which has direct, prerequisite value for the subsequent course in pharmacology. It is the purpose of this paper to point out, from a pharmacologist's point of view, how these factors can bring about an effective correlation between pharmacognosy and pharmacology.

It should be obvious that the most prominent area for correlating the course in pharmacognosy and pharmacology is in the selection of the drugs to be studied. The course in pharmacognosy should include all drugs of plant and animal origin which have sufficient pharmaceutic or therapeutic demand to warrant their consideration. This list should be constantly revised by adding new council-accepted or specialty drugs which are of plant or animal source, or which contain active principles from such source. In order to keep the course in pharmacognosy dynamic and to correlate it with a well-organized course in pharmacology, the instructor should be just as alert to new drug developments as he is quick to recognize drugs which have outlived their therapeutic usefulness. Under no circumstance should he include drugs simply because they were in the course when he took it or because the drug has appeared on some obsolete state board examination. In other words, the instructor in pharmacognosy must be a leader in his field of specialization and not a follower.

Emphasis is the second major criterion which determines how well pharmacognosy correlates with pharmacology. This factor is important from two points of view:

- (1) The overall emphasis which is placed on drugs of the same therapeutic groups.
- (2) The specific emphasis which is placed on the detailed information concerning the individual drugs.

To achieve maximum integration with pharmacology the instructor in pharmacognosy should emphasize only those drugs which have useful pharmaceutic or therapeutic applications. For example, when considering the subject of volatile oils, only historical attention, if any mention is made at all, should be paid to their action on the kidney, whereas their use as carminatives and flavoring agents should be emphasized. In a similar manner, only historic attention should be

given to the diuretic properties of buchu, whereas the diuretic properties of the xanthine derivatives should be emphasized. There should be no time in a modern pharmacognosy course for teaching drug uses which are no longer valid. If due care is not exerted in this regard, there will be little correlation between pharmacognosy and pharmacology, and the student will come to question the validity of his work when such drugs as volatile oils and buchu are dwelt on at length in pharmacognosy and are not mentioned as diuretics in pharmacology. In fact, they are not even listed as such in several modern text books on pharmacology.

Some of the details of the individual drugs which should be emphasized include history, source, constituents, use, dose, and the names of available preparations. It is the prerogative of pharmacognosy—a science as old as pharmacy itself—to mention some of the details of habitat, collection, and preparation for market, and some of the fascinating stories associated with the development of drugs. When properly presented, such an approach not only creates interest on the part of the student, but also provides a background for subsequent work in pharmacology. Likewise, pharmacognosy should concern itself with the origin of useful drugs obtained from plants and animals. In the event the pharmacognosy instructor has specialized in the taxonomic approach to the subject, care must be exercised at this point lest he delve too deeply into the taxonomy of the drugs and neglect the opportunities to deal with the histology of the parent substance. For example, when discussing the source of preparations of the anterior pituitary, it should be pointed out that there are three types of cells in this portion of the gland. Subsequent discussion could then center about the histological changes which occur when the gland secretes. Similar opportunities for considering the histology of the gland are available when discussing the active principles of the posterior pituitary, adrenals, liver, stomach, thyroid, pancreas, etc. In addition, some consideration should be given to the processes whereby living plant and animal organisms synthesize complex organic compounds from less

complex ones. Some understanding of biosynthesis and cellular histology will serve the student well in later courses dealing with the effect of drugs on cellular function. Perhaps the most important segment for correlating pharmacognosy and pharmacology is concerned with the composition and chemical nature of the active principles. At this point, attention should be directed to the physical and chemical properties of the active principle, the effect of optical isomerism on drug activity (epinephrine, hyoscyamine, and atropine, etc.) and the relationship between the active principles as obtained from two different plant sources. An unusual opportunity in connection with the last-named relationship is provided by the cardiac glycosides obtained from *Digitalis purpurea* and *Digitalis lanata*. In the example cited, it should be mentioned that each glycoside represents the combination of an aglycone or genin with one or more molecules of sugar and that the pharmacological activity resides in the aglycone or genin, whereas the particular sugar attached is thought to control water solubility, cell penetrability, and persistance of cardiac action. The relationship of the glycosides obtained from the two sources as shown by enzymatic and alkaline hydrolysis or by acid hydrolysis, could then be compared and contrasted. Such information is fundamental to pharmacognosy and provides a firm basis upon which the pharmacology of these glycosides can later be built by the pharmacologist.

Although there may be some teachers who object to including therapeutic uses in the basic pharmacognosy courses, I am sure this practice would not only create student interest in the various drugs, but would also tend to better correlate pharmacognosy with pharmacology. Furthermore, it is as much the right of the pharmacognosist to venture into the field of drug use, as it is the pharmacologist's prerogative to venture into the field of therapeutics. Nevertheless, this privilege carries with it the obligation that the pharmacognosist be as critical in the uses he assigns to the various drugs as is his colleague in pharmacology.

A mastery of posology comes only with repetition. Therefore, it is the responsibility of pharmacognosy to insist that the student commit to memory the official dose of a carefully selected list of useful drugs. When possible, all courses in pharmacy should refer to the dose of the drug under consideration. Such repetition is important and will most certainly help the student retain this valuable information.

The tremendous increase in the multiplicity of trade names for various active principles has made it virtually impossible to cover them adequately during the usual courses in dispensing pharmacy, pharmaceutical chemistry, and pharmacology. Inclusion of the generic and trade names for crude drugs and their active principles in the course in pharmacognosy would not only provide an area of intimate correlation with pharmacology and other pharmaceutical disciplines, but would also direct student attention to the more practical aspects of pharmacognosy. Thus, the student would learn to associate with digitalis preparations such trade names as Digifolin, Digiglusin, Digitalone, Digitan, and Digitol; with digitoxin such trade names as Cardigen, Crystodigin, Digidin, Digitaline Nativelle, Digithyl, Purodigin, and Unidigin; and with lanatoside C the trade name of Cedilanid. This list is not complete but will serve to illustrate the importance of trade names in modern pharmacognosy.

Finally, it should be mentioned that it is too much to expect those instructors in pharmacognosy who have been trained primarily as botanists, without the benefit of some training in pharmacy or pharmacology, to correlate their subject with pharmacology. At the same time, one should not expect the ultimate degree of correlation between the two courses when the instructor in pharmacology has no first-hand knowledge of the scope of pharmacognosy. Therefore, the instructors charged with the responsibility of teaching these courses should be familiar with, or at least become familiar with, the aims and objectives of both disciplines.

In summary it may be stated that pharmacognosy, if kept up-to-date and presented in a modern form, is a fundamental discipline necessary for the successful training of the pharmacist. Although there may be advantages to one method of classifying the material presented in pharmacognosy over that of another, one classification can be just as deadening as another if care is not used in selecting the drugs to be considered and if the emphasis given various drugs is incorrectly placed. Attention has been directed to the fact that the careful selection of drugs and the proper emphasis provide the greatest areas for correlating pharmacognosy with pharmacology. Emphasis should be placed on those drugs of therapeutic or pharmaceutical merit and on certain details of the individual agents. Those details which should receive attention in order to achieve maximum correlation with pharmacology are as follows: history, source, composition, use, dose, and names of available preparations. The ultimate degree of correlation between these fundamental courses can be achieved only when the instructors concerned have an understanding of, and a sympathetic attitude toward, each other's subject.

How to Attract Students for Graduate Work in Our Schools of Pharmacy

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It was not until the last decade of the 19th century that graduate work in our schools of pharmacy was started. There were two obvious reasons for it. First the fact that, with

only a few exceptions, the instruction in these schools was intended to offer an appendix to the drugstore practice rather than a systematic approach to the basic sciences of pharmacy, and secondly that until 1892 no American school of pharmacy conducted a four year course of undergraduate study, i.e., met general academic requirements for graduate study leading up to advanced degrees.

It was in 1892 that Edward Kremers, head of the University of Wisconsin, School of Pharmacy, introduced the first pharmaceutical four year course in the United States of America, thus placing pharmaceutical instruction on a par with the other academic courses. In 1902 the first American Ph.D. for work done in the school of pharmacy of a recognized University was earned at Wisconsin. This example was followed rather slowly. In 1932 the four years undergraduate course was made obligatory for all recognized schools of pharmacy in the United States. It is still only a limited number of these schools which offer graduate work. This fact proves the sense of responsibility on the part of the leaders of these schools. Successful graduate work requires a staff interested not only in teaching but also in research, and apparatus, technical and library facilities which not all schools can afford. Hence these schools do a better service to themselves and pharmacy at large in recommending presumptive graduate students to better equipped schools than to make an attempt without adequate means.

It has to be kept in mind that it is not for the title, especially the coveted Doctor's degree, but for the knowledge and all around education that graduate study should be taken up. The title is the well merited distinction of the successful graduate student. But if the person concerned does not have the talent, knowledge, industry and moral equipment, his title will not help him very much. In other words, it is only the best and most promising undergraduate who should be encouraged to take up graduate study. It is these people whom we want as future teachers in our schools of pharmacy and as research workers in our academic and industrial laboratories.

The question is how to find just these people and to get them interested in graduate work. There are some people who for one reason or another left school after graduation with their bachelor degree and somewhat later decided to take up graduate study. In these cases only a thorough interview can be made the basis for acceptance or refusal. In most cases, however, it is in the undergraduate school where we have to look for the future graduate student. Hence it is the task of every teacher to select those who seem to be promising and to pay them special attention. Very often just these students are not quite sure of themselves. They have to be encouraged, given special assignments, and made to feel that there is so much more in the field concerned than can be taught in the undergraduate course. If in addition the teacher is genuinely enthusiastic (as he should be), then he will hardly fail to attract the student. If he does not, then the student was not what the teacher expected him to be.

A further incentive which should be emphasized is the possibility to take, in addition to the laboratory work and technical instruction, courses in one or the other of the humanities during the time of the graduate study. Here I am thinking especially of courses in the history of science, pharmacy, chemistry and medicine, whenever they are offered, and in sociology. It cannot be stressed emphatically enough that the knowledge gained in such courses prevent the student from becoming onesided and helps him to develop his personality and capacity of judgment.

It is understood that the financial problems and prospects have likewise to be discussed with the presumptive graduate student. Since they are rather promising, this doesn't seem to be a difficult task. In most cases the graduate student will be given paid work as a teaching assistant or a research assistant. Besides, there is the possibility of receiving a stipend from the American Foundation for Pharmaceutical Education. As to the prospects for positions after the successful conclusion of the graduate work, it is a matter of fact that for years to come there will be no difficulty for a good man with an advanced degree to find a position in a school of pharmacy or in

pharmaceutical industry. However, the main thing should be the satisfaction which the presumptive student is entitled to find in his scientific and general development and its utilization.

In conclusion I want to say that there should be some people in every school of pharmacy who are talented and ambitious and, if approached in the right way, can be interested in taking up graduate work.

For the teachers, however, the words of the Bible are still valid:

"Ask, and it shall be given you; seek and ye shall find; knock, and it shall be opened unto you".

(St. Matthew, chapter 7,7.)

How to Create Interest in Graduate Study

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Introduction

A bit of personal background information might well be documented to precede any remarks pertinent to the immediate subject of interest.

In 1936, as the result of a voluntary letter of recommendation from the late Dean C. B. Jordan, the writer applied for a teaching position. At that time the candidate was equipped with only a bachelor of science degree in pharmacy and registration as a pharmacist. A distinguished student rating had been achieved during the senior year of undergraduate work. The immediate position open was with a small denominational college where salaries were at a low ebb, and staff members with Ph. D. degrees were scarce. The teaching position available in the school of pharmacy at this institution was an opportunity, because in those years the hours required in a retail pharmacy were long, tedious, quite demanding in output,

*A contribution of the Committee on Problems and Plans.

and relatively unremunerative with no particular prestige. A sad indictment for a college degree, but nonetheless a statement of fidelity. Thus, it was a combination of an undergraduate record, an available position, a favorable unsolicited recommendation, and condition of the times that led the author into a teaching position. The pleasure, satisfaction and prestige of teaching combined to whet an inherent desire to obtain further formal training in order to be more adequately prepared to perform the duties of a teacher and to be ready for advancement when the opportunity presented itself. Also, to conform with improvements in pharmaceutical education it was necessary that staff members acquire advanced degrees. All of these factors mentioned point to the conclusion that circumstances, a record, a sign of the times, a recommendation and an opportunity contributed to encourage one humble individual to broaden the scope of an educational background. Here then are enumerated important basic factors that encourage prospective undergraduates to pursue a course of graduate study. Someone must be impressed with the leadership, character, personality and scholarship of the undergraduate, who, in turn, will enjoy the confidence of the individual student and thus be influential in guiding the person to a future career. Upon inquiry it was found that at least one other associate had much the same biography.

One would be derelict not to mention the influence of available scholarships, fellowships and assistantships, or grants of other types. All materially aid in bringing forth a decision to engage in an educational program beyond the four-year level. However, there still remain the underlying factors that are necessary; a good undergraduate record, the trust and encouragement of those who know best the capabilities of the candidate, the magnitude of the opportunities, and an impulse to distinguish one's self in society.

Influence of Teaching Staff

The influence of the teaching staff is a potent factor to reckon with in creating an interest in advanced study. Initial candidates in the graduate program at the Medical College of Virginia in the field of pharmaceutical chemistry were inter-

ested in this manner. Likely prospects were talked with by the department head. Undergraduate students are deeply impressed by professors who, in their opinion, are well-informed and accomplished teachers. A sort of reverence develops and it is easy for the teacher to council the student where there is such confidence in the judgment of another.

There are students who readily envisage a full measure of prestige in the position of a teacher and pursue graduate study in the profession of choice as a career. Others are imbued with a keen interest in research. At the moment the writer can call to mind several graduate associates who were truly research minded. It was a native interest and ability. Although each of them now does some teaching, the major contribution is and always will be in the field of research. The undergraduate training only serves to stimulate a desire to do research work and develops an urge to apply for admission to a graduate school. A natural aptitude and interest then are contributing factors in an exhibition of interest in graduate study.

Common Basic Factors

Actually the problem of determining what stimuli are involved in leading one to assume a graduate program, and also "ways and means to direct more qualified graduates into graduate work" lies in the need to ferret out the basic motives that may be common to all, if such there be. A beginning has been made if the factors mentioned previously have been met, all or in part, in any given situation.

In my opinion, folks enter graduate study backed by a superior undergraduate record of scholastic achievement and a suitable personality and character with evidence of leadership. Next is a recognition of an aptitude for advanced study on the part of those with whom the subject has studied. The prospect must enjoy the confidence of his teachers to follow through and to deliver a performance creditable to the profession involved. A firm conviction that the undergraduate will justify such faith as is placed in his ability to perform is a common factor, and incidentally a potent incentive to the candidate. Further, there is a native interest on the part of

the prospective graduate student to pursue graduate instruction, exhibited independently or cultivated by those who recognize ability and aptitude and encourage its expression.

Grants in aid clinch the opportunity to make a decision, for it is a financial sacrifice to embark on a period of education beyond the four-year level. A delay in time is also a factor, for graduate study means a few more years of investment in time before a firm foundation for the future, both financially and materially, can be established.

Other Factors Involved

A fair number of graduate students received initial interest by being singled out as assistants in laboratory during the undergraduate program. Some are assigned to such tasks on student aid programs. Preparation of reagents used in laboratories, checking library assignments, or other jobs, bring the student in close contact with teaching and research activities. Superior students are often asked to serve as assistants. Inherent qualifications for advanced study are apparent or cultivated, and later a desire and opportunity lead the individual into further study.

The lure of anticipated pleasure, flexibility and prestige compensate in part for any monetary advantage of positions not requiring advanced degrees. Over the long run of the years required to reach maturity in a position as pharmacist and drug store proprietor or manager, there would be financial gain beyond that which could be anticipated, with an equal amount of effort, in a career of teaching or research. A desire to be respected or to be a recognized authority are intangible assets accruing from a position occupied by reason of graduate degrees. An humble type of ego, perhaps, but who ever convinced anyone of his intelligence without a good measure of self-confidence?

Although professional service representatives often command incomes beyond that generally available to those occupying positions in teaching or research, working hours and confinement or much travel combine to discourage some. One is hard pressed to find someone with an advanced degree whose original objective motivating entrance into graduate

school was a service to mankind. The ultimate result of efforts put forth do rebound as a real service to humanity, but this was not the starting point.

A degree of security without risk is also associated with a desire to obtain positions requiring advanced degrees. There is afforded an opportunity to spend more time with one's family, clubs and professional organizations in a regular fashion. Perhaps somewhat intangible, but nevertheless true and a forceful enough argument to be a factor in the minds of some people.

Obviously, the number, nature and quality of opportunities are greater than ever in recent years. Remuneration in teaching and research is much more favorable than heretofore. Reorganization of schools of pharmacy to conform to the recommendations of the American Council on Pharmaceutical Education requires additional personnel with advanced degrees. Expansion of pharmaceutical manufacturing concerns has created additional research positions as well as good administrative positions. A number of people recognize the more favorable hours available in teaching and research positions. These are all noteworthy factors, giving impetus to an interest in graduate work.

It seems only fair to make note of the fact that a person with a superior mind just naturally gravitates to graduate study. A yearning for greater knowledge, a dissatisfaction with the status-quo, urge folks on to higher levels. A few with keen minds cannot be directed into graduate study, but there is reason for those who recognize superior ability in another to call attention to the opportunities and advantages of a career in a field where only those with advanced degrees can perform.

It may be of interest to conclude with the note that the writer's graduate training extended through the summers of 1937-38-39-40, and from 1943 through 1945. During these years a good many graduate students have crossed my path. Through these acquaintances, by inquiry and through associations, these impressions have been gained and recorded for whatever they may be worth.

It is hoped that from the contributions of others on the subject of graduate students, some positive common factors may be established showing why students pursue graduate instruction and how to improve the quality of those who apply for admission to the graduate schools.

Methods of Stimulating Students for Graduate Study in Pharmacognosy*

L. DAVID HINER
University of Utah

I took the liberty of changing the title of this paper from that listed in the program, because I think this one states more clearly my objective. The other title included, "and Related Biological Areas," and in my case at least, I am interested in Pharmacognosy as the major, thus relegating "other biological areas" to the students minor field of study. I will probably trample on some feeling this day, but I assure you that everything I say is meant to be constructive. I accepted this assignment because I love pharmacognosy, and I hoped that I could bring even the mildly interested, yes even the skeptics, to admit that this segment of pharmacy training is potentially tremendous in the contribution it can make to a professional education. At this point I hasten to explain that by the term pharmacognosy in this paper I include by inference not only the subject matter, but the individuals associated with it as well.

It is no illusion that pharmacognosy has elected to rest on its laurels, lo, these many years. It was sort of a quiet, dignified discipline anyway, so perhaps that was only natural. This complacency was so subtle and insidious that before we realized it, pharmacognosy had been fastened upon by individuals and groups almost onto death. I call this to your

*Presented before the 1954 Seminar on Pharmacognosy in Salt Lake City.

attention because it is important to the subject. If we are to stimulate anyone about graduate work in this field we have first to recognize our very obvious faults and correct them. Pharmacognosy itself first needs stimulation, and the related biologists here explain that comes about in at least one of two ways. Depress the inhibitors, or stimulate the augmentors. Why be finicky, let's use both. But if we are to stimulate anybody, there must first be something to get stimulated about.

Several things are responsible for the flat attitude toward pharmacognosy. These include among the material things the disappearance of crude drugs in that form from the drug stores. I have had druggists and educators too point this out to students of mine as conclusive evidence that we don't need *Nux Vomica* anymore now that we have strychnine in tablets, etc. I directed one of the students to just casually ask the man where strychnine comes from. We got the startlingly frank answer, "Merck and Company." Milk comes from "Carnation" cans now days; so we don't need cows anymore.

This is amusing, but significant news for us. In indignation we might say our brother pharmacists are responsible for this. They had no business taking those active constituents out of drugs, or making those elegant extractive preparations. Then pharmacognosy could have rested secure with rows upon rows of bundled medicinal hay stacked on our shelves in place of the magnificent preparations pharmacy has created from these crude drug sources. Now we all know about this, but the fact that such ideas exist and are communicated rather widely to prospective graduate students makes it difficult to stimulate any great interest in them for the future.

Among the "not so material" things giving pharmacognosy stimulation a bad time is the "disparaging attitude" taken toward it by many pharmacy educators. A prospective student has a hard time keeping stimulated about pharmacognosy if he hears it slighted by the dean of the institution, or even worse, hears it ridiculed by the instructors in his other courses. I hold this situation primarily against the pharmacognosy instructor, and next against the dean of the institu-

tion. The only reason I didn't put the dean first at fault is because I don't think legislating any course's position of significance in the curriculum is the best method of handling it. I would much rather see the pharmacognosy instructor sit down with his colleagues and work out the solution to the problem. May I even mention a couple of approach methods?

I would like to suggest you try approaching the other men with the constructive ideas of (1), "How can I modernize my pharmacognosy courses so that they will correlate better with the fine job you're doing in pharmacy, etc.?" and (2), "Mr. Pharmaceutical Chemist, would you like to do me a favor? We are working with Digitalis in my 143 course and we need additional information about glycosides. How about coming to class with me and giving us 'all' the business on these constituents? Choose your own time." Or (3), "Mr. Pharmacologist, I'll be gone for the next few days, how would you like to discuss the diuretics for my class in pharmacognosy, since this question will come up anyway and I'd like to have you handle it." Or (4), "I'll be talking about the Solonaceous drugs these next few days, why don't you come in and hear what the pharmacognosist thinks of them?"

I have found that most people are rather susceptible to invitations and requests for favors that magnify their significance and the significance of their special field of interest to your own courses. Students likewise are impressed by this apparent cooperative spirit among their faculty, and resistance to learning lessens. However, I still hold the dean responsible for maintaining a reasonable balance of instruction within his institution, and any dean who fails to uphold the tradition and prestige of each segment of his instructional obligation is unworthy of his administrative title. Now, just in case you have lost the idea, I am busy trying to stimulate prospective students in pharmacognosy through the medium of forcefully or otherwise "depressing the inhibitors." Of course if the inhibition is pedagogically intrinsic, corrective surgery may be the sane answer. We must of course be mindful too that these same principles of stimulation are like-

wise to be kept in mind as they relate to the prospective student to be stimulated, except to omit the surgery.

On the positive side of this discussion let's now seek some action by tickling the augmentor factors. That means a quick look at the stimulating mechanism, that's us, as we relate to the organism to be stimulated, that's the prospective graduate student. We have assembled here reputedly, the finest pharmacognosy talent in the land. If you were an administrator looking for a stimulator in your organization how many such are there among us, and whom of us would you take? You can't light fires with dead sticks unless you create a spark, or perhaps rub them vigorously enough so the heat of friction causes them to glow once more. Even a bed of coals that once burned brightly but was dampened and left to smoulder and go out can be brought to life again if it is kindled anew. From this seminar I hope will come this new life. Pardon me for saying so, but pharmacognosists remind me of a nice snug bed of sticks and coals all bedded down with the ashes of tenure and seniority. It's about time we stirred us up to the opportunities that are ours in this fine field of instruction.

To become interested and stimulated about pharmacognosy a prospective graduate student must realize he has a future in it. If we are honest with him we must admit that the opportunities are limited, but by the same token, they are good. Seven requests for pharmacognosists came over my desk this year. A lot more are due to come soon. Because we already don't have enough men, people are being compelled to teach pharmacognosy entirely outside their fields of preparation and training. We must convince prospective students there is a future in pharmacognosy. Research, manufacturing concerns, scientific crime laboratories, and manifold other outlets can use pharmacognosy-trained men. They don't all have to teach for a living, but we need to use our imagination in conceiving new opportunities for these boys.

Pharmacognosy today, like everything else, exists in a changing world. We need to popularize this subject, and instead of just plain facts all the time we need to think more in terms of what, about these drugs, will interest and stimulate

students more. We need to consider what knowledge of these drugs is vital, and not mislead ourselves by assuming that everything is, and then grind it in. The trouble with science education is we have too many facts. We spend so much time learning facts we don't have time to think and scheme and dream. For this reason we lack culture.

Pharmacognosy doesn't need to be like that. All the history, glamour, romance and tradition that is pharmacy is ours. The whole world is our garden, and its peoples with their culture and their charms stand by to welcome us. To stimulate, just invite students to visit these strange lands with you, and then let them see it through your eyes and experience. Pharmacognosy to me is a fascinating, cultural, scientific discipline unlike anything else in our curriculum. In this day of conflict and occupation, scarcely a class in pharmacognosy meets that does not have a returned veteran in it who has first hand information of foreign lands. Don't fail to stimulate this augmentor force for your subject.

Participation is an excellent method of stimulation. As questions arise in class, or individually, invite the students to explore them with you and perhaps create a special problem for them. Let this activity be evident with the students making reports to the class. Have them bring in plant specimens too, if they happen to be curious about them. To those who decry this as taking your valuable time, I suggest that it is about time the student's welfare became of paramount interest, and besides, they need some stimulation.

Stimulate interest in pharmacognosy by encouraging good publicity. I personally never miss a chance to talk to student groups, service clubs, garden clubs, and even faculty groups about medicinal plants. I have talked to several scout groups about medicines from natural sources. Fine comments followed these, as a result of which I have been invited to appear on TV several times in connection with pharmacognosy. It's something that has to be sold just like anything else. I find it stimulating.

Pharmacognosy has practical value in the oddest ways, which sometimes can help us to publicize it. Call it showman-

ship, if you please, and that's alright with me, if it creates interest. I have the State inspectors bringing in suspicious drug samples to me all the time. The students get the case history and then they are invited to participate in the identification. They like it and it's stimulating.

A student brought in a problem one day which, although not strictly pharmaceutical, pharmacognosy still got the credit for its solution. This customer in a store where the boy worked crocheted fine spreads for competitive purposes. Part way through her grandest effort of all, the end popped off the crochet hook. Alas, the change of hooks immediately became evident in the weave of the spread and it appeared that months of careful labor was for naught. She happened to mention it to the student, and in typical, cocky pharmaceutical fashion he requested the broken hook and assured the lady that pharmacists knew everything and could fix it. He then presented the problem to the microscopic pharmacognosy laboratory class and they went to work on it. A detailed drawing of the hook end was made with magnification. The shank, length of the barb, and angle of the barb with the shank were all carefully measured with the ocular micrometer. We examined nearly two hundred hooks to get one that matched exactly, and then came the breathless moments of clinical trial. It worked! The spread was completed without a flaw, and pharmacognosy is still getting credit for the job. Those students mention it yet when I see them. That's stimulation.

Have students study labels of preparations. They read like story books. Begin a lecture sometime with, "Class, I'd like to tell you a story about a label I have in my hand." It can include official titles, sources, constituents, doses, uses and all the facts, but it's stimulating to take the dose with a different flavor. Finally, students like to know about special prizes for pharmacognosy, so mention the Kilmer and the Newcomb awards.

In closing these remarks I am mindful that some are probably thinking, "What the hell is he doing to pharmacognosy?" To you all I challenge that I love my subject as

much as any, and I'm ready to fight for it. I want to see some fire in your eyes when you speak of it, and I want to see you work and help fit it into the curriculum of your institution where it belongs. If you don't like my ideas about your subject the worst you can say of my pharmacognosy and this paper in the final analysis is, "It may be unclean, but at least it's sterile." To my knowledge no one has ever suffered a pathological syndrome from it and I hope some one has received some stimulation for the future.

Notes on Graduate Study*

EDWARD S. BRADY

Professor of Pharmacy, University of Southern California

The question which has been directed to the members of the Committee on Problems and Plans, "How can more qualified students be directed into graduate work in pharmacy?", at once suggests answers which include superficial recommendations for publicity campaigns to attract the interest of the likely candidate, increased remuneration for the graduate assistant, and other time-tested schemes which have proven useful for attracting almost anybody to almost anything. But continued contemplation of this seemingly innocent query suggests that the questioners really should have asked, "What's the matter with pharmaceutical research?" For most other fields seem to enjoy a steady supply of applicants for graduate study, and they offer no more in opportunities or remuneration than does pharmacy. Why does pharmacy fail to compare favorably with the other sciences in this regard? It is the opinion of the writer, bluntly stated, that the overall low quality of pharmaceutical research is the principal factor in rendering graduate study in pharmacy unattractive to the scientific-minded student.

This factor may even serve to reduce the number of research-minded students who initially enter upon pharmacy

*A contribution of the Committee on Problems and Plans.

for their undergraduate study. Since the great majority of our graduates from the professional program settle down in occupations directly connected with retail pharmacy, may it not be presumed that retailing is what they want, what they are best suited for in talent, temperament, and training, and what they came to pharmacy school for in the first place? If they were really research-minded, scholarly, and dedicated upon leaving high school, is it not probable that other fields of science, those which suggest research of a high type as a natural sequence of undergraduate study, would have greater attraction for them? Certainly the field of pharmacy is one of the last that would come to their mind as an area which fosters worthwhile research, and I fear that honest publicity of any type would only serve to confirm this conclusion.

For it takes no great degree of discernment, after reading those journals devoted to scientific and professional pharmacy or listening to the papers presented at our various meetings, to conclude that much of the "research" work going forward in our schools of pharmacy is of the general level of "senior-problem" projects. Empirical studies seem to prevail, and these are of a type so elementary (and I do not mean fundamental) and so unscientific in their concept and method of study that they often cause acute embarrassment in those who essay to contemplate them in good faith. This mediocre research can only attract mediocre students who, in their pursuits following graduation, never rise above this dismal level.

Although it is apparent that this pattern of mediocrity is and has been self-perpetuating, there is one important group which may, by courageous action, change things for the better. That group consists of those deans, department heads, and professors who are responsible for the research program in their institutions. They must honestly admit to themselves, and to each other, that the biggest graduate school is not necessarily the best graduate school, and that the number of projects and publications is not nearly as important as their content. In graduate work, quality is not only more important than quantity, but quality is everything.

It is true that, initially, action based upon this concept would reduce the enrollment in the graduate schools of most every institution. Our journals would diminish in thickness as they improved in quality. Attendance would drop at the meetings of learned societies when the presentation of papers was limited to those really contributing something worthwhile to the scientific aspects of our profession. Things might even get so bad that some research professors would be forced to personally supervise undergraduate laboratory work due to the shortage of graduate assistants. But in a reasonably short time, short as the growth of educational development is measured, a healthy resurgence of interest in pharmaceutical research could be expected, built on a firm foundation of superior achievement, and perpetuated by the high quality of candidates finally receiving their graduate degrees. Such men and women, going out to teach, search, guide and discover, would inevitably attract desirable students. They would insist that fundamental training in schools of pharmacy be maintained at a high level, they would inspire and foster scientific curiosity in those whom they taught, and they would demand and receive proper opportunity and compensation for those whom they guided. And thus the cycle of cause and effect, action and reaction, would be re-established, but this time on a proud level of worthy accomplishment.

It will be interesting to observe the opinion of other members of the Committee on Problems and Plans regarding the problem of obtaining qualified students for graduate study. Some, it is to be hoped, will concur in the opinions expressed above. For I cannot visualize the field of pharmaceutical research as a green pasture, with the qualified students waiting like patient sheep for the gate to be opened to admit them. Our field is full of stones and brambles, our fences are in bad repair, and the wolves have driven away our flocks. Get your gun and hoe and come with me, compadre, there is much work to be done.

The Editor's Page

The inimitable and lovable Hugh C. Muldoon, in his Remington Medal Address on December 7, 1953, set forth the "Strengths of Pharmacy". He admitted that pharmacy, like all other professions and similar lines of business, has its weaknesses. But for one night, and on this occasion he was going to discuss its strengths and he did it magnificently in a most dramatic way. It was Hugh C. Muldoon at his best. The address must have been an inspiration to all who heard it as it has been to all who have read it.

Whether the good Dean intended to do so, I cannot say, but when he enumerated the strengths of pharmacy, he placed upon the profession of pharmacy certain responsibilities, just as when we came out of the second World War the most powerful nation in the world, we found that the world had placed upon us the responsibility for financial and moral leadership that encircled the globe.

The responsibility which the strengths of pharmacy places upon the profession is to delete from our stores some of those practices and things that are inconsistent with the promotion and preservation of public health.

During the last decade a tremendous effort has been made, and with great success, to make pharmacy a public health profession, a member of the public health team and the drug store a public health institution. This has been done through the improvement of our educational and research programs, by activity in local, state and national scientific and educational organizations and by the ever active and forward looking leadership of the officers of the American Pharmaceutical Association and its affiliated organizations.

The retail druggists also have been busy. In recent years they joined the crusade to eliminate from our stores that type of reading material which is not conducive to the improvement of mental health.

On the other hand, I know of no crusade that has as its objective the unshackling of the drugstore from the liquor business.

I had a most embarrassing question put to me recently by an editorial writer for the Nebraska State Journal. The question was, "How can you call the drugstore a public health institution when the druggist is a purveyor of liquor which is a major factor in the production of crime and the spread of some of the most devastating diseases that attack human beings?" "That to me," he said, "is the acme of inconsistency." And I had to admit it was. The author of this sixty-four dollar question is an employee of a newspaper that was founded the year Nebraska territory became a state and one that has survived without accepting a liquor advertisement.

Recently there appeared in the pharmaceutical and the lay press, that a study of the records of the Nebraska Liquor Commission shows that drugstores rank fourth behind restaurants, pool halls, and grocery stores in the percentage of retail outlets in which the sale of liquor is connected with some other business. Where off-sale liquor and beer are concerned, the drugstore is the retail establishment most often retailing alcoholic beverages. Nearly 45 percent of the package liquor departments are in drugstores. These facts do not strengthen the claim that the drugstore is a public health institution and they do not improve pharmacy's relation with the public.

In these latter days, pharmaceutical educators are seeking ways and means of teaching ethics more effectively. It is the business of the college of pharmacy to teach ethics but the ethical standards for the practice of pharmacy, in so far as the public is concerned, are determined by what goes on in the drugstore. The question now is, "Has pharmacy the strength to unshackle the drugstore from the clinch of the liquor business and has it the courage to undertake the task?" I am sure that if Dr. Leon Lascoff were alive to advise us he would say, "It Can Be Done".

Rho Chi, the honorary pharmaceutical society, not only honored Dr. Lloyd E. Blauch, Chief of Education in the

Health Professions, Office of Education, U. S. Department of Health, Education, and Welfare, when it elected him to honorary membership, it also did honor to itself. Dr. Blauch's contributions to The Pharmaceutical Survey were outstanding, and since the completion of that project, his attendance and contributions to our seminars and annual meetings have been invaluable. His extensive knowledge of the problems of the health professions and a deep and sympathetic understanding of the special problems of pharmacy, his foresight and clear thinking and matured judgment have made a lasting imprint on pharmaceutical education.

We note with pleasure that Purdue University, at its May commencement, conferred upon Dean Francis Norman Hughes of the University of Toronto the degree of Doctor of Laws. Dean Hughes has been a leader in pharmaceutical education for many years and was largely responsible for bringing the Ontario College of Pharmacy into the family of schools constituting the University of Toronto. President Hovde of Purdue, in awarding the degree, made the following statement: "In recognition of outstanding achievements as an educator, writer, and leader in the profession of pharmacy in the Dominion of Canada. Distinguished for his contributions to the advancement of our knowledge of pharmaceutical science in the war against disease."

At the June commencement, the University of Nebraska awarded the Honorary Doctor of Science degree to Louis Christian Zopf. In conferring the degree, Chancellor John K. Selleck read the following citation:

"Louis Christian Zopf, Professor of Pharmacy and Dean of the College of Pharmacy, State University of Iowa. Outstanding authority and consultant in the field of dermatological preparations. Author of numerous scientific papers and contributor of important monographs in this area. Member of the Committee on Revision of the Pharmacopoeia of the United States. Chairman of the Executive Committee of the American Association of Colleges of Pharmacy. Distin-

guished teacher of pharmacy. Leader in hospital pharmacy and pharmaceutical education."

There is no better evidence that pharmacy has found a place among the scientific and scholarly pursuits than the granting of honorary degrees by great universities for accomplishments in the pharmaceutical area, and there is no better indication that pharmaceutical education, research, and practice are definitely on the march.

In the current issue of the *Journal*, Dr. James A. Kearns of Rutgers University, in an article entitled "Proficiency in Pharmaceutical Calculations" tells us why a student after completing the eighth grade is a better arithmetician than when he enters the college of pharmacy, and also, why there are so many failures in examinations in pharmacy calculations. Dr. Kearns is not a pharmacist. He is a mathematician with a background in educational psychology and has had many years of experience teaching pharmacy calculations with success in Rutgers University College of Pharmacy. He was loath to express his views for publication in a pharmaceutical journal but was finally persuaded to do so in the interest of better teaching. He approaches the subject from the broader viewpoint of the mathematician and not from the narrower point of view of the one who is only pharmaceutically trained. What he says deserves the attention of every teacher of pharmaceutical calculations as well as every pharmaceutical administrator. Dr. Kearns may be well on the way of becoming a member of that comparatively small and much maligned group of men who are not pharmaceutically trained but have made a contribution to pharmaceutical education that has broadened and enriched our educational program. It is high time for those of us engaged in pharmaceutical education to snap out of our provincialism.

In an article entitled, "The Drug Store Owners of the United States Can Solve the Problem of the 'Shortage of Pharmacists'", also published in this issue of the *Journal*, Dr. Scott C. Rea, a retail pharmacist of Northumberland, Pennsylvania, gets down to the grass roots of the problem.

For a long time, the Editor has held that the source of supply of pharmacy students lies in the hands of the local retail pharmacist. He is the person who has the personal contact with the student and is qualified by his training and experience to convince the student with character, brains, and ambition that pharmacy is an area worthy of his effort and talents. He can do more effective work than any number of high school vocational directors whose knowledge concerning the opportunities which pharmacy offers is gleaned from the printed page and is purely academic in nature. For this reason the importance of placing the convincingly written "Shall I Study Pharmacy?" into the hands of every retail pharmacist, is obvious. And it is one of the most amazing and stimulating facts of the mid-century to see the effort being made by retail druggists the country over, at their own expense and that of their organizations, to put it there. It's a great day in the history of the profession when the retail pharmacists and we ourselves realize that he is a part of pharmacy's educational system. What that means to pharmacy may be measured in part by what it meant to pharmaceutical education when pharmaceutical industry became a part of the educational program and brought both financial and moral support to the cause. We are grateful to Dr. Rea for the contribution he has made toward the recruitment of pharmacy students.

Again we have to announce the passing of another great teacher. While this passing is a part of life on the earth we take comfort in knowing that Dr. Donald W. Harding's life and the lessons taught will continue to live through generations of students and we can be happy in the knowledge that he has begun a new and better life beyond the limits of our horizon.

Rufus A. Lyman

Marriages

Mr. William E. Woods, director of the Pharmacy Extension Service, University of Texas and Miss Martha Ponder on May 22, 1954, in San Antonio, Texas.

Notes and News

Alabama Polytechnic Institute.—Four awards were made at the spring commencement for superior scholarship.— H. R. Collins has been initiated into Pni Kappa Phi.— Three students were initiated by Rho Chi at the spring ceremonies and two pharmacy students who were already in Rho Chi were initiated into Sphinx, national senior women's honorary.— C. D. Lunsford, pharmacy student, who is president of the Interfraternity Council, has been initiated into Omicron Delta Kappa and Blue Key, national leadership organizations.— Mr. Laudon Williams, owner of the Montgomery Apothecary and former member of the Alabama Board of Pharmacy, was guest speaker at the Phi Delta Chi banquet honoring the graduating class.— Glenn Marsh who served with the Medical Service Department in Korea has entered the graduate school and majoring in pharmacology.— Prof. C. W. Hargreaves has been appointed the pharmacy school's representative on the Institute's Faculty Council.— Dean L. S. Blake represented the School of Pharmacy at the convention of the Alabama State Pharmaceutical Association at Biloxi, Mississippi in June.— Graduate work is now being offered in pharmacy, pharmaceutical chemistry, pharmacology, and in pharmacognosy.

Albany College of Pharmacy.—Degrees were conferred on seventy-four candidates by Dr. Carter Davidson, chancellor of the university, at the seventy-fourth commencement of the college on June 10. Marilyn Anne McCarthey delivered the valedictory and the commencement address was given by F. Royce Franzoni, president of the APhA. The exercises were followed by the annual alumni reunion banquet which was attended by over three hundred alumni and friends. Certificates of honor were awarded to members of the class of 1904 who were celebrating the fiftieth anniversary of their graduation. A gift of \$2,825 was presented to the college by the alumni for the Library Fund.

University of Arizona.—The College regrets the loss of Mr. Newell Stewart from the staff. His appointment as executive vice-president of the newly formed National Pharmaceutical Council requires his residing in New York City.— The Arizona Chapter of Phi Delta Chi fraternity received the first prize and the Student Branch the third, for their window displays in the National Pharmacy Week Public Exhibit Competition last October.— Dolores A. Strittmatter and Louis Deckelmeier, pharmacy seniors, were elected to membership in Phi Kappa Phi Honor Society. The former will enter graduate study in pharmacognosy this fall and the latter will work in a retail pharmacy in Phoenix.— Mr. P. A. Olson, the local Lilly representative, addressed the Student Branch on the scope of the work of a medical service representative, on April 10.— During the week of April 16, thirty-two

students made an educational tour of the Lilly, the Upjohn, and the Parke-Davis plants.— On April 7, Dr. A. L. Piechioni presented a report on the topic, "The Action of Antihypertensive Drugs" before the Tucson Pharmaceutical Association, and on April 21, he lectured on "The Pharmacology of New Drugs" before the Pima County Hospital Nurses Association.— Annual "Lyman Day" was celebrated as last year at the famous Kinsley Ranch down Nogales way.— Members of the senior class were guests of the Arizona Pharmaceutical Association at the annual banquet held on May 5 in celebration of "Newell Stewart Day." The faculty and students assisted with the preparation for the annual meeting of District No. 8, Boards and Colleges, which was held in Tucson on May 6-8.— On May 13, Dr. Joseph A. Zapatocky was initiated into full membership and Mr. Chin into associate membership of Sigma Xi.— Awards and gifts were announced at the annual banquet of the Student Branch on May 20.— Twenty-five students were graduated on May 26. Miss Dolores Strittmatter received the Pennington Drug Award of \$100 for the best undergraduate research paper.

University of Buffalo.—On April 25, about five hundred friends of Dean A. B. Lemon attended a testimonial dinner in his honor at the Hotel Statler. During the program he was presented with a number of gifts from the many pharmaceutical bodies to which he had given long and loyal service. Dean Lemon retires this year from the office which he has held since 1937. Prof. D. H. Murray has been appointed acting dean.— The twelfth annual spring clinic was held on May 13. The program was comprised of discussions of ophthalmic solutions by Drs. C. F. Lord and John P. Luhr, and of solubilizing agents as prescription compounding aids by Prof. A. J. MonteBovi of the St. John's College of Pharmacy. Prescriptions of the types discussed were filled in the dispensing laboratory in the afternoon session.— On June 1-3, sixty junior and senior students made the annual trip to the Lilly Laboratories. Sixty-seven seniors were granted the bachelor's degree at the June commencement.

Butler University.—Junior and senior pharmacy students toured the Abbott Laboratories and the Bauer and Black plant in Chicago, March 13-16.— Dean K. L. Kaufman, during April spoke before the Muncie, Indiana, Torch Club, the Indiana St. Joseph County Pharmaceutical Association and drug clubs at South Bend, New Albany, and Louisville, and the Rotary Club at Portland and the Optimist Club in Indianapolis.— Dean Kaufman and Drs. E. J. Rowe and B. M. Mull attended the meetings of District No. 4 at Lexington, Kentucky in May.— At the Honors Day Convocation, William Fleming, a senior pharmacy student, received five major awards. Three other pharmacy students received prizes.— William Fleming was the recipient of the American Legion award, and also the winner of a \$1500 American Foundation Fellowship for graduate study at Butler next year.— Mr. Fleming and Donald Broadtck, also a pharmacy student, were among the thirty-one Air Force ROTC Butler University students who have been cited for

scholastic proficiency by the Commander of Cadets during the first semester of the school year.— Cadel Lt. Col. Leonard Cshier, a senior pharmacy student was elected chairman of the fifth annual Butler University Air Force ROTC Military Ball.— The College was awarded third prize in the college division of the National Pharmacy Week display contest.— The pharmacy staff was largely responsible for the work and success in organizing the Indianapolis Branch of the APhA this spring.— Dr. A. A. Harwood is the president-elect of the Butler University Chapter of Sigma Xi.— Dean Kaufman was recently elected at a meeting in Cincinnati, Ohio, second vice-president of the International Association of Torch Clubs.— Fourteen students were initiated by Kappa Psi on May 2.— Twelve new initiates of Rho Chi were honored at a banquet on May 20.

University of California.—New additions to the staff, 1953-54, are Dr. Eugene C. Jorgensen, instructor in chemistry; Dr. Kwan Hua Lee, assistant professor of pharmaceutical chemistry; Dr. Alex Shrift, instructor in pharmacognosy and plant physiology; and Mr. John E. Preston, instructor in pharmacy.— On February 28, Dean T. C. Daniels and Drs. Brodie, Goyan, Riegelman and Schwarz presented a one-day seminar before members of the Tri-County Pharmaceutical Association at Monterey. The program was devoted to discussions of ophthalmic solutions, ointment vehicles, suspending and emulsifying agents, pharmaceutical education and restrictive legislation.— The \$20,000,000 building program on the Medical Center campus of the University is drawing to completion. Increment I of the Medical Sciences Building will be ready for occupancy by early summer. The College of Pharmacy will occupy floors 8, 9, 10 and 11 of the Medical Sciences Building.— The Herbert C. Moffett teaching hospital with a capacity of 483 beds will be available for occupancy about December 1, 1954. Some \$250,000 was appropriated to the College of Pharmacy to equip the teaching and research laboratories of the College.— Dr. John F. Oneto, professor of pharmaceutical chemistry and pharmacy, is currently on sabbatical leave.— Dr. Louis Mapspeis, who completed the Ph.D. degree in the summer of 1953, is now assistant professor of pharmaceutical chemistry at Columbia University.— Mr. Alain Huitric plans to complete the requirements for the Ph.D. degree in pharmaceutical chemistry in June.— District 8 meetings of Boards and Colleges were held in Tucson, Arizona on May 6, 7, and 8. Those attending from the University of California were Dean and Mrs. T. C. Daniels, Assistant Dean J. J. Eiler, and Dr. D. C. Brodie.— Dean and Mrs. T. C. Daniels attended the Post Graduate Seminar in Pharmacy conducted by Washington State College of Pharmacy, Pullman, Washington on April 21 and 22. Dean Daniels addressed the seminar on the subject of Modern Therapeutic Agents. He was guest speaker at a Student Branch American Pharmaceutical Association-sponsored banquet honoring the senior class in Pharmacy at Washington State College. His address was entitled, "Your Future in Pharmacy."— Dr. Robertson Pratt, professor

of pharmacognosy and plant physiology, attended the meeting of the Curriculum Committee of the American Association of Colleges of Pharmacy at Philadelphia on April 23 and 24. On May 7 and 8, Dr. Pratt was guest speaker at the annual banquet held in connection with a joint meeting of the National Council of Bioanalysts and the California Association of Clinical Laboratories at Yosemite National Park. He addressed the meeting on the subject of "Antibiotic Sensitivity Testing."— Dr. Louis A. Strait, professor of biophysics, is presenting a paper, "The Electronic Spectra of the Alpha-Phenyl Ketimine Group" at the Symposium on Molecular Structure and Spectroscopy, Department of Physics and the Graduate School of The Ohio State University at Columbus, Ohio, June 14-18.

University of Southern California.—Commencement exercises were held June 12 for the first full class of Doctor of Pharmacy students with 69 graduates receiving the degree. Nine candidates were granted the M.S. degree, six of these with a major in Hospital Pharmacy, the first to graduate under the residency program of the Veteran's Administration.— Dean Alvah Hall was recently elected president of the California State Board of Pharmacy.— Dean Hall, Dr. O. Miller, and Dr. J. Biles attended the District Eight meeting in Tucson, Arizona.— The annual convention of the California Pharmaceutical Association, held in San Francisco June 6 to 9 was attended by Dean Hall, Dr. O. Miller, Prof. W. G. Smith, Prof. Paul Kalemkiarian, and several students.— Prof. E. Brady appeared on a panel to discuss "Duplication and Substitution," served on the Resolutions Committee, and was re-elected to the Executive Board of the Association.— The Seminar series in Santa Barbara was concluded on June 4 and will resume in Fresno and San Bernardino in the fall.— Local pharmaceutical associations were addressed by Dr. O. Miller and Dr. J. Bester, who met with the Bay Area Pharmaceutical Association in San Pedro; Dean Hall, who spoke to the Tri-County Pharmaceutical Association in Fresno; and Prof. Brady, who attended a meeting of the San Luis Obispo County Association in Santa Maria.— Plans for a two-week "refresher course" in new medicinal products and dispensing techniques to be held in early September, are being made by a committee with Dr. O. Miller as chairman.

University of Cincinnati College of Pharmacy.—Within a few days of the 104th anniversary of the incorporation, March 23, 1850, of the Cincinnati College of Pharmacy, ground was broken, March 10, 1954, on the University of Cincinnati campus for the building which it will occupy in September as the University's newest unit. Participating in the ceremonies were Mayor Edward Waldvogel; Benton K. Brodie, chairman of the University's Board of Directors; Dr. Raymond Walters, president of the University; Mr. John Magro, president of the College; Dean Joseph Kowalewski of the College; other representatives of the College and the University; James E. Allen, architect; and representatives of Frank Kesser and Sons Co., contractors. The building, an

addition to the campus botany-zoology building, will cost \$230,000 and have 11,100 square feet of floor space and be six stories in height. The three lower floors will have laboratories, preparation and storage rooms and faculty offices. The fourth floor—a joint library for the College and the departments of botany and zoology. The fifth floor—a large classroom, seminar room, and offices of the dean. Additional classroom facilities will be provided on the top floors. The ground breaking was a highlight in eight years of negotiation, following a formal request to the University by the Cincinnati College of Pharmacy in 1945 that it be merged with the University of Cincinnati after a long standing affiliate relationship. In the interval the College raised \$625,000 in endowment and met other requirements of the University of Cincinnati. The merger becomes complete in September, 1954, when its classes meet for the first time in the new campus quarters. The College of Pharmacy is the oldest west of the Alleghenies. Located, since 1928, at 423 W. Eighth Street, it had formerly occupied sites on Walnut and West Court Street. As a result of the merger, President Raymond Walters has announced the appointment of the following faculty and staff members: Dr. J. F. Kowalewski, dean and professor of pharmacy and pharmacy administration. Dean Kowalewski holds both the A.M. and the Ph.D. from the University of Cincinnati. Dr. Carl Swisher, professor of pharmaceutical chemistry; Dr. J. Leon Lichtin, associate professor of pharmacy; Dr. Gilbert Schmidt, professor of pharmacognosy; Mr. Edward Plogman, part-time lecturer in pharmacy; Mr. Raymond Eling, assistant professor of pharmacy; Mr. Melvin Hoevel, associate professor of pharmaceutical administration; Dr. Harry S. Shirkey, part-time associate professor of pharmacology; Dr. J. Edwin Reed, part-time associate professor of health and hygiene; Messrs. Herman Humphrey and Irwin Weinberg, part-time instructors in hospital pharmacy; and Mrs. Gladys Schroer, secretary to the College. Construction is now underway on the University campus for a building to be used by the College of Pharmacy.

University of Colorado.—Dean Charles F. Poe and Dr. Fred Drommond took part in the panel discussions at the recent meeting of District No. 8, Boards and Colleges, at Tucson, Arizona. Dean Poe also attended the meeting in Lubbock, Texas, of the southwestern section of the American Association for the Advancement of Science.—Faculty and members of the senior class were guests of the Weld County Pharmaceutical Association on the occasion of the initiation of "Senior Day" which is to become an annual affair. The seniors visited hospitals and pharmacies during the day and were served a banquet in the evening. Dr. Lloyd Florio, director of health and hospitals in Denver, spoke on the subject, "World Health" at the pharmacy and nursing convocation held in connection with United Nations Week on the campus.—Dr. David Stiles of the Abbott Laboratories addressed the senior class recently, outlining the Abbott prescription Survey which he conducted.—At the last meeting of the Student Branch, gifts were

awarded to six outstanding seniors.—Dr. Norman Witt attended the annual convention of Alpha Epsilon Delta, national Premedic Honor Society of which he is treasurer, at the University of Indiana. He took part in a discussion of premedical education. Dr. Witt is a premedical advisor on the Boulder campus.—Rho Chi recently gave a banquet and held initiation ceremonies for seven new members.—Recent guest speakers on the campus were Prof. Fritz Arndt from the University of Istanbul, and Dr. H. B. Herbert of Harvard University.—Mr. John L. Wailes, instructor in pharmacy, and candidate for the doctorate in August, has accepted a position effective in September as assistant professor of pharmacy at Montana State University.

Columbia University.—A chapter, Beta Gamma, of Rho Chi was formally installed at Columbia University College of Pharmacy on May 24, 1954. It is the fifty-first chapter to be established and the College is the first college of pharmacy in the city of New York to be so honored. The Board of Trustees, the faculty, the administrative staff, the university, New York's other three pharmacy colleges, and other branches of the pharmaceutical field were represented at the impressive ceremonies which were conducted by Dr. Roy A. Bowers, national vice-president of Rho Chi and dean of the College of Pharmacy of Rutgers University. Dean Emeritus Charles W. Ballard was the guest of honor and gave the first address to the chapter. His subject was, "Recognition of Scholastic Achievement." The charter members include three undergraduates, twelve graduates, and twelve faculty members.—Prof. Abraham Taub was one of 18 alumni to receive a medal for outstanding service from the Columbia University Alumni Federation. He is the first member of the staff of the college of pharmacy to be so honored. The medals were awarded at the Federation's luncheon on June 1, in connection with the university's second bicentennial and commencement ceremonies at which the main address was given by the Honorable Lewis L. Strauss, chairman of the U. S. Atomic Energy Commission. Another example of close relationship between the college and the university is evidenced further in the recognition of the services of Dr. Frederick D. Lascoff, College Trustee and Alumnus, in his election to Recording Secretary of the Alumni Federation.—Eighty-one B.S. and eleven M.S. in pharmacy degrees were conferred at the June commencement.—Arge Drubulis, a graduating senior, received seven of the 23 prizes and awards presented by the College and the Alumni Association at the annual award night preceding commencement.

University of Connecticut.—The American Hospital Association held an institute on hospital pharmacy on the campus June 28 through July 2.—The Alpha Gamma Chapter of Rho Chi sponsored a banquet in April to honor a group of newly elected members.—Prof. N. W. Fenney, Grand Regent of Kappa Psi, and Mrs. Fenney, recently completed a tour of visitation to the undergraduate chapters of the fraternity at Washington State College, the State College of Oregon and the

Universities of Washington, Montana, Texas, and California. Included also were the graduate chapters in Seattle, Portland, and San Francisco.— The eighth Postgraduate Pharmacy Clinic, sponsored by the College and the Connecticut Pharmaceutical Association, was held on April 28 and 29. President A. N. Jorgensen and several members of the staff took part in the program.—Dean H. G. Hewitt presented a paper on cooperation between colleges, state boards, and state associations at the annual meeting of District No. 1, Boards and Colleges in Providence, Rhode Island.— The senior class recently visited the Lilly and the Upjohn plants.— The Stearns-Winthrop Research Foundation Fellowship has been released to Bernard Misek.— The Fesler Company of Stamford, Connecticut, has established a grant for two fellowships for pharmacological research under Dr. R. K. Toms on trichomonacidal drugs.— Fifteen members of the Student Branch with their faculty advisor, Prof. W. R. Williams, took part in the Fourth Annual Convention of Student Branches of the APhA held at Temple University on May 1. At the annual banquet, the chief speakers were Dr. R. L. Johnson, president of Temple; Dr. R. P. Fischelis, secretary of the APhA; and Dr. L. F. Tice, chairman of the committee on Student Branches of the APhA.— At the annual Honors Day convocation, sponsored by the Rho Chi Society, Dean Hewitt announced the prizes for twelve students for superior scholarship.— Recently Dean Hewitt was reelected chairman of the Connecticut State Advisory Committee on Drugs, Chemicals, and Hospital Supplies. This committee is made up of pharmacists, physicians, and purchasing representatives from various state institutions and works with the State Standards Engineer. The purpose of this is to aid the State Standardization Committee in purchasing certain supplies for the state.

Drake University.—Dr. Arnold D. Marens has resigned his position as associate professor of pharmaceutical chemistry and will join the pharmacy staff of Rutgers University.— Mr. Charles H. Vandenburg, who has been an instructor in pharmacy for the past two years and who received the master's degree at the 1954 graduation ceremonies, has resigned to return to the retail practice in West Des Moines.—Dr. Jacob Rodia, who received the doctorate in pharmaceutical chemistry from the University of Illinois, and for the past two years has been employed in industry, has been appointed associate professor of pharmaceutical chemistry. Dr. Rodia served for several years as an assistant in pharmaceutical chemistry in the University of Illinois College of Pharmacy.— Mr. Rex Morrison, who received the B.S. in Pharm. degree at Drake in June, and has had several years experience in high school teaching, has been appointed as instructor in pharmacy.— Dr. C. Boyd Granberg has been promoted in rank from associate professor to professor of pharmacy, and Dr. James R. Weeks has been advanced to a full professorship in pharmacology.— Dr. Granberg was elected secretary-treasurer of District No. 5, Boards and Colleges, at the recent meet-

ing in Des Moines.— Three new members were initiated into Alpha Sigma Chapter of Rho Chi at a banquet on May 24. Dean J. B. Burt of the University of Nebraska was the guest speaker.

University of Florida.—The Student Branch accepted the invitation of the Benton Engineering Council of the College of Engineering to participate in their Engineering Fair, April 8-11. Pharmacy students set up about twenty exhibits of interest to the general public, many of which involved demonstrations of pharmaceutical techniques by students.— On April 12 the Branch held a joint meeting with the two pre-medical organizations on the campus at which Dr. Dale D. Archer of the Lederle Laboratories was guest speaker.— Dean P. A. Foote took part in a panel discussion at the Daytona meeting of the Central Florida Pharmaceutical Association on April 11.— Among those who have recently received the doctorate in the pharmaceutical sciences, the following have been elected to Sigma Xi: William D. Easterly, Durward N. Enterlain, Louis D. King, Betty L. McLaughlin, and Estebe Nunez-Melendez.— Five pharmacy students presented a forum about the College of Pharmacy at the Florida State Pharmaceutical Convention in Jacksonville on May 10. Major topics discussed were the University as a whole, the College of Pharmacy, the allied sciences, including plans for the medical school, and the proposed extension of the pharmacy curriculum. The purpose of the students participation was to better acquaint pharmacists with the school, and to give the students an insight into the work being done by the pharmacists.— At the June commencement, Frederick D. Molpus was given the Alumni Association Award as the Best Scholar of all graduating seniors of the entire university.— Seven graduate students in pharmacy were given the doctorate.— The Alachua County Pharmaceutical Auxiliary gave a garden party at the home of Dean and Mrs. Foote on May 6, honoring the seniors. At this time the Auxiliary presented the college with a tape recorder to be used by the students and awards for excellence in scholarship were made to five students.— The Beta Alpha Chapter of Rho Chi was installed at the University on May 22. Dean Perry A. Foote, University of Florida and past national president of Rho Chi officiated, being assisted by Dr. James A. Campbell. Fourteen charter members were initiated. Following the services, Dr. Foote addressed the group at a dinner held at the Wade Hampton Hotel.— At the Awards Day ceremonies awards were granted to four pharmacy students for outstanding achievement.— Robert M. Keith won the Omicron Delta Kappa award granted to the senior making the highest score on the Graduate Record Examination. He placed in the upper 2% of those taking the examination in the entire nation.— Ares Artes, pharmacy senior, was one of the eight students of the entire university who received a Certificate of Merit to "Outstanding Seniors." He was also elected to "Who's Who" in American Colleges and Universities.

Fordham University.—During the Easter vacation, a group of 75 students from the junior and senior classes; visited the Lilly and the

Abbott Laboratories and the Winthrop-Stearns at Albany, New York.—Oil portraits of the late Dr. Jacob Diner, first dean of the college, and of the late Dr. W. J. Bonisteel, former professor of *materia medica*, were unveiled at the college. They are the gift of the Alpha Zeta Omega fraternity and the class of 1928.—Chief Supervisor Frank Smith of the New York State Narcotic Bureau addressed the senior class recently on "The Uniform Narcotic Law of New York State and Its Enforcement."—At their graduation banquet, the class of 1954, presented to their class moderator, Prof. Alfred J. White, a gold wrist watch as a token of appreciation for four years of guidance.—At a meeting of the Alumni Association on June 2, Alumni President Milton Meisner welcomed and inducted the class of 1954 into Association membership.—At the commencement exercises on June 9th, 109 students received degrees and four awards were made for superior scholarship.

George Washington University.—Twenty-eight seniors were graduated at the June convocation, five of them receiving degrees with "Special Honors" for high scholastic work throughout their entire course.—George W. Pickens was awarded the James Douglas Goddard prize for the highest average in his class. Harold L. Phelps and Joseph V. Pistone received the Merck awards for the second and third highest averages.—Dean Charles W. Bliven, who is currently serving as president of the District of Columbia Pharmaceutical Association, presided at the annual convention held in Ocean City, Maryland, in June. Irving Goldbert, a 1936 graduate of the College, was elected president for the coming year.

University of Georgia.—Nine outstanding pharmacy students were honored at the ceremonies of the sixth annual Student-Faculty Alumni Day. Also, certificates of merit were given to seven senior members of the staff of the Georgia Pharmacist.—Two Georgia students have been awarded American Foundation for Pharmaceutical Education Fellowships for the coming year. They are Jane Heng, valedictorian of the University's senior class, who will take graduate work at the University of Michigan, and Donald E. Cadwallader, Jr., graduate of the University of Buffalo, who will continue graduate work in pharmacy at the University of Georgia.

Division of Pharmacy, Howard College.—Installation of the Beta Beta chapter of Rho Chi was held on May 19 with Dean Perry A. Foote of the University of Florida being the installing officer. The installation date coincided with the Division's first annual Honors Day. Open house was held in the afternoon. Following a banquet in the evening, the graduating seniors were recognized and the awards presented. A total of fifteen awards were made. The Lehn and Fink Gold Medal Award was presented for the first time as were three other awards which were sponsored by the various student organizations, one each to a member of the freshman, the sophomore and the junior class, attaining the highest scholastic average. The purpose is, of course, to stimulate scholarship among the lower classes. The faculty has estab-

lished two awards for service and outstanding accomplishment in pharmacy, one to be given to a student and the other to an alumnus. Mr. Joe Vance, administrator of a local hospital and teacher of hospital pharmacy in the Division, received the faculty alumnus award this year in recognition of his contributions to hospital pharmacy within the state and because of his services in various capacities in hospital pharmacy organizations.— Thirty-nine students received the B.S. in Pharm. degree at the commencement exercises on May 31.

University of Illinois.—Commencement for the Chicago Professional Colleges was held on June 18. At that time, 386 degrees were awarded, of which 76 were Bachelor of Science in Pharmacy.— Removal of the College of Pharmacy to the new East Dentistry-Medicine-Pharmacy Building is in progress and will be completed by the opening of school in the fall.— The College has received a grant of \$1,000 from the National Golf Fund for a research project to be conducted by the College of Pharmacy at the Drug and Horticultural Experiment Station. Dr. Ralph F. Voigt will direct the comprehensive study of the natural history of annual blue grass (*Poa annua*), chickweed and crabgrass.— At the second Annual Honor Day Convocation on June 9, three seniors were cited to graduate with honors and five were awarded prizes for excellence in scholarship. Of the undergraduates, four were cited for high honor and nine for honor for superior scholastic attainment. Following the convocation program a reception was held by the faculty in the Chicago Illini Union honoring the graduating seniors.

Idaho State College.—On May 28, the annual Student Branch Awards Dinner was held in conjunction with a testimonial dinner honoring Dean Emeritus Eugene O. Leonard who retired at the end of the academic year as Director of Research and Professor of Pharmacy after having served for thirty-six years. He was the moving spirit in establishing the College of Pharmacy and the various organizations within it. Approximately 350 students, faculty members, and townspeople, and alumni were in attendance at the dinner. Many gifts were presented to the Dean and Mrs. Leonard and announcement was made that the Idaho State Alumni Scholarship Fund will hereafter be named in honor of the Dean.— Thirty-one seniors received the bachelor's degree at the May commencement.— Student leaders in the various organizations in the College were speakers at the Pocatello Lions Club luncheon on May 26. Each discussed the relationship of their organization to pharmacy and its improvement. Dr. C. C. Riedesel and Prof. Ivan Rowland will attend the Teachers Seminar at the University of Connecticut in August. All members of the pharmacy staff attended the meetings of the Idaho State Pharmaceutical Association at McCall in June.

State University of Iowa.—The degree of Doctor of Science was conferred upon Dean Louis C. Zopf by the University of Nebraska on June 7. The honor was conferred for his influence in shaping the course of education in pharmacy and for his extensive researches on

the composition and pharmacological effects of ointments and lotions.— Dean Zopf represented the AACP at several of the District Meetings during the spring months.— The Dean addressed the High Twelve Club in Cedar Rapids on May 23 on the topic, "Medicines, New and Old."— Prof. Gail A. Wiese was guest speaker at a luncheon meeting of the West Liberty Rotary Club in March on the topic, "Drugs, Yesterday and Today."— Prof. James W. Jones spoke on chemistry and pharmacy at the annual Career Day sponsored by the Eagle Grove Public Schools on April 14. Junior and senior students from nine community high schools attended the conference.— Dr. Jones also delivered the commencement address at the Center Point High School on May 20.— Drs. Robert L. Van Horne and Gail A. Wiese were promoted from assistant to associate professorships, and Henry P. Baumann and Wendle L. Kerr, from instructors to assistant professorships, all promotions becoming effective July 1.— Forty-five students were awarded the degree B.S. in Pharm. at the June commencement. Seymour M. Blaug and Alfred P. Collins were initiated as full and associate members, respectively, in Sigma Xi in May.

University of Kansas City.—Thirty-one seniors were graduated with the B.S. in Pharm. degree on June 4.— The Alpha Omega chapter of Rho Chi was installed at the school on May 19. Dean J. Allen Reese of the University of Kansas was the installing officer. Dean Leslie L. Eisenbrandt and Prof. Lyle Willits of the faculty were among those initiated as charter members.

Loyola University College of Pharmacy.—Thirty-one students were granted the bachelor's degree at the June commencement.— Two students have been initiated recently by Rho Chi.— Dean John F. McCloskey was honored on award night by the presentation of a merit certificate and a gold watch for 25 years of service at Loyola. He was co-honoree with Rev. J. A. Butt, S. J., who has also served on the University faculty for the same number of years.— Dean McCloskey attended the Walgreen Seminar for Drug Store Administration in Chicago in June.— Dr. Robert McGowan, who received the doctorate in pharmacy from the University of Florida Graduate School, has returned to Loyola and joined the pharmacy staff.— Mr. Clifton J. Latiolais, a 1949 alumnus, who received the master's degree from the University of Michigan, has accepted the position of Chief Pharmacist at the Strong Memorial Hospital in Rochester, New York.— Beginning with the September 1954 class, the College of Pharmacy of Loyola University of the South will be on a five-year scholastic program.

University of Maryland.—Nearly five hundred persons attended the "Open House" which was held on the evening of March 12. Every department including the library held demonstrations, exhibits, and lectures. The manufacturing laboratory featured a model hospital pharmacy loaned for the affair by the APhA. The dispensing laboratory presented the methods of making suppositories, ointments, lotions and pills. Other laboratories presented dramatic demonstrations. Several

serious films, one in color, of extra curricular activities were shown. During the past year real progress was made in extra-curricular activities. The Student Government Alliance has been completely reorganized and has tried out a new Constitution which gives the students broader privileges and responsibilities. The new school paper, *The Maryland Mortar*, a weekly, is greatly appreciated by the students.— A new 16 page brochure giving a pictorial account of education at the school, together with valuable information on opportunities in the profession, has been prepared and is now being distributed.— On November 23, 1953, the administration and faculty gave a tea in honor of Dr. B. Olive Cole who retired on November 30. The faculty presented her with a jewelled scarab brooch and a huge bouquet of red roses.— The Epsilon Chapter of Lambda Kappa Sigma Sorority was founded at the school on May 2, 1929, largely through the efforts of Miss Cole. To celebrate the silver anniversary of this event, the active and graduate chapters joined in a banquet on May 11. Twenty-nine members attended, five of whom were initiated by Rho Chi on April 29.— Eight members of the local Student Branch attended the Fourth Annual Regional Convention of the Student Branches held at Temple University on May 1.

University of Minnesota.—Fifty-six seniors received the bachelor's degree on June 12.— Announcement was made at the Cap and Gown Day convocation, May 13, that six seniors had been elected to Phi Lambda Upsilon; two seniors, 4 juniors and two graduate students to Rho Chi; two students awarded American Foundation for Pharmaceutical Education Scholarships; and nine others were given prizes or scholarships for superior attainments.— A Sargent Manual Polarograph Model III has been added to the scientific equipment and refrigerating drinking fountains have been installed on each floor of Wulling Hall.— A fellowship in hospital pharmacy, effective in September, has been established in the University Hospital.— During April and May the senior class was addressed by Dr. F. W. Moudry, secretary of the Minnesota Board; by Mr. Frank Sojat, director of the Bureau of Narcotics and by four representatives of various phases of industry.— Dean Rogers and Drs. Hadley, Miller, and DiGangi attended the meetings of District No. 5, Boards and Colleges in Des Moines in May and Dr. C. V. Netz attended a meeting of the AACP Curriculum Committee in Philadelphia in April.— The senior class was the guest at luncheon of McKesson and Robbins, Inc., on May 26, and of the Minnesota State Pharmaceutical Association on June 21. Both functions were at the Hotel Nicolet.

University of Mississippi.—Fourteen new members were initiated by the Rho Chi Society on May 6.— Awards were made for superior scholarship to five pharmacy students at the Honors Day convocation on May 5.— The baccalaureate sermon was delivered on the morning of May 30 by Dr. Julian B. Feibelman, Rabbi of Temple Sinai of New Orleans. The commencement exercises were held in the afternoon of

the same day with Dr. Harry K. Newburn, President of the Educational Television and Radio Center of Ann Arbor, Michigan giving the commencement address. Sixteen graduates received the degree of Bachelor of Science in Pharmacy.

State University of Montana.—Dean Jack E. Orr and Profs. Call, Bryan, and Suchy, attended the meeting of District No. 7 at Seattle in May. Dean Orr and Prof. Call presented papers.— John A. Wailes who is a candidate for the doctorate this summer at the University of Colorado, will join the Montana staff next fall as assistant professor of pharmacy.— Prof. and Mrs. Call visited various places in Oregon and Washington in June.— Dean Orr and Profs. Suchy and Bryan attended the State Association in Great Falls in June. Dean Orr gave a report on the activities of the school during the past year.— Major pieces of equipment recently acquired include a Sanborn Two-Channel Recording Electrocardiograph, A. Master Vugraph, and a paper electro-phonetic apparatus.

University of Nebraska.—During the spring semester, Beta Chapter of Kappa Epsilon initiated four new members.— Approximately 150 persons attended the annual banquet which was sponsored by the Student Branch. It was also the occasion for presenting scholarship awards to seven students. Mr. Howard Hopkins was elected voting delegate and Miss Phyllis Plotz, alternate to the National Rho Chi Convention, in August in Boston. Dean J. B. Burt attended the meeting of District No. 8, at Tucson, Arizona in May.— New equipment acquired for the laboratories include a new pH meter, a Stokes E tablet machine, an Eppenbach colloid mill, a Fritzpatrick comminuting machine, and a forced draft constant temperature oven.— Five members of the staff attended the meetings of District No. 5 at Des Moines in May. Dr. L. D. Small discussed the topic, "The Need of Exercising Greater Control of the Practices of Pharmacy from Within the Profession Rather than Through Restrictive Legislation."— Members of the senior class, the graduate students and members of the faculty were guests of the Smith-Dorsey Division of the Wander Company at a complimentary dinner on April 29, and of the Lincoln Drug Company on May 21.— Fourteen seniors received the Bachelor's degree at the commencement exercises on June 7. Among the five members receiving honorary degrees from the University was Louis Christian Zopf, professor of pharmacy and dean of the College of Pharmacy of the State University of Iowa who was awarded the Honorary Doctor of Science degree.— Dr. Donald M. Pace, chairman of the department of physiology, and two graduate students, Lefkos Aftonomas and Michael Layon, attended sessions of the Tissue Culture Association in Galveston, Texas, the week of April 5. Dr. Pace participated in a panel discussion on the teaching of tissue culture courses.

University of New Mexico.—Three members of the staff attended the meeting of Colleges and Boards of District No. 8 at Tucson, Arizona, in May. Dean Cataline and Dr. James McDavid took part in the panel

discussion group relative to theories of pharmacy as taught in the classrooms and the actual practices in the drug stores.— Joseph A. Rich, a pharmacy junior, was recently elected to Phi Kappa Phi. He ranked fifth in the entire junior class of the University.— The annual banquet honoring the senior class and sponsored by Kappa Psi was held on May 21. On this occasion, Dean Cataline presented awards to three students for superior scholarship.— The senior class made a study tour of the local wholesale drug houses in May.

University of North Carolina.—Seven undergraduates were recipients of special merit awards for scholarship at the close of the last academic year.— Special lectures recently delivered at the school included: "The Tetracyclines" by Dr. Coy Waller of the Lederle Company, under the sponsorship of Rho Chi; "Derivatives of the I-amino-acridines" by Dr. J. L. Irvin of the department of biochemistry; "Advances in Helminthology" by Dr. W. W. Cort of the School of Public Health; "Opportunities for Graduating Students in North Carolina" by Dr. Paul Olsen.— A closed system of telephones has been installed in the dispensing laboratory for the purpose of instruction in receiving prescriptions.— A Beckman DV Spectrophotometer has been added to the special equipment for graduate study.

North Dakota Agricultural College.—Dean W. F. Sudro attended the District 5 meeting of Boards and Colleges at Des Moines, Iowa, in May.— Forty seniors were graduated at the June commencement. Miss Dorothy Biever and Mr. Dwight Horen graduated "with honor."— Mr. A. Kueval, instructor in pharmacy, will continue work for the doctorate in pharmaceutical chemistry at Purdue during the summer and Wm. Lucas, instructor in pharmacy will work toward the doctorate in pharmacy at the University of Colorado. Dr. Ralph Banziger will divide his time between drug store relief and research activities in pharmacology. Dr. C. E. Miller will attend the Institute of Nuclear Studies School at Oak Ridge, Tennessee and Dean Sudro will attend the Boston meetings in August.— Seven students were initiated into Kappa chapter of the Rho Chi Society on May 25.— A Stokes Microvac, Hi Vac Still has been added to the manufacturing laboratory equipment.

University of Oklahoma.—Dr. W. Paul Briggs, Executive Director of the American Foundation for Pharmaceutical Education, represented pharmacy on the Oklahoma campus during the annual Career Conference held March 4, 5, and 6.— Dr. C. P. Headlee and Dean Ralph W. Clark have addressed several high school assemblies on the subject, "The Use and Mis-use of Drugs." They demonstrated the action of barbiturates and amphetamines on rats. The same subject was used in a television show sponsored by the university, entitled "The Open Window."— Kent Kyger, a pharmacy senior was among the thirty outstanding students at the university to be included in *Who's Who in American Colleges and Universities*.— Jack Jennings, a pharmacy junior, made a straight "A" grade last semester and has been elected to Phi Lambda Upsilon. He is also president of the Student Branch.—

Ethel Mae Brown, a pharmacy junior is winner of a \$100 grant-in-aid from the Hostess Club. The Club, composed of 39 sorority and fraternity house mothers, voted earlier this year to do away with their annual custom of exchanging Christmas gifts and instead, they took the money and added a bit from their treasury to award a grant-in-aid to a worthy student to be used for tuition and books.— Five pharmacy students were elected to Phi Lambda Upsilon, honorary chemical fraternity, the last semester, and four were given awards for superior work.— Dean Clark addressed the Hospital Pharmacy section of the Mid-Western Hospital Association in Kansas City on April 29, on the subject, "An Educator Considers Hospital Pharmacy."— A walnut prescription desk used by an early Oklahoma doctor has been presented to the University by members of the Creek Memorial Association of Okmulgee. It has a past covering approximately sixty years of territorial and state history. Without the use of any nails, it was made for Dr. G. P. Bristow by a cabinet maker in Dale, Oklahoma.— Twenty-five students and their wives recently visited the Abbott Laboratories and Bauer and Black in Chicago and the Parke, Davis plant in Detroit.— Twenty seniors were graduated at the June commencement.

Oregon State College.—Grand Regent N. W. Fenney of Kappa Psi and Mrs. Fenney were guests at an evening dinner given by members of the staff on March 24.— Almost the entire staff attended and contributed to the program of District No. 7, Boards and Colleges which was held at the University of Washington, April 29 and 30.— Pharmacy seniors took their annual field trip to Portland on May 7 and visited the wholesale plant of McKesson and Robbins and the Crime Laboratory of the Portland City Police.— Dr. Daniel P. N. Tsao has been granted \$300 from the general Research Fund of the graduate school to pursue his researches on digitalis. He will spend the summer at the Drug Plant laboratory at the University of Washington working on a combined research project with Dr. Heber W. Youngken, Jr.— At the Honors Convocation, seven awards were given for high scholarship and excellent school activities. John D. Hensala won two of the major awards, had previously been granted an American Foundation for Pharmaceutical Education Fellowship and will pursue graduate work in pharmacology at the University of Maryland.— Dr. J. W. Fairbairn, head of the department of pharmacognosy, University of London, who during the last academic year was visiting associate professor at the University of Washington, spoke on "A Comparison of Pharmaceutical Education in the United States with that in England," at the combined annual pharmacy banquet on May 18. This annual affair is sponsored by Rho Chi, Kappa Psi, and Lambda Kappa Sigma. Dr. Fairbairn also presented a lecture on May 19, sponsored by the school. The subject was "Re-searching the Plant Kingdom for Drugs."— Miss Shirley F. Roeder has resigned her position as instructor in pharmacy and plans to pursue advanced studies next year.— Prof. Leo A. Sciuchetti has been awarded a Foundation Fellowship to continue graduate work in pharma-

cognosy at the University of Washington during the summer.—Over \$3,600 worth of pharmaceuticals and chemicals were donated to the school last year for teaching purposes by various manufacturers and organizations.—On June 7, thirty-three seniors received the B.S. in Pharm. degree. Two of the number were also awarded the A.B. degree and one graduate student was given the master's degree in pharmaceutical chemistry.—Prof. and Mrs. H. C. Forsland made a trip to Alaska in May, making visits to drugstores and conferring with members of the pharmacy territorial board.

Philadelphia College of Pharmacy and Science.—More than 300 graduates attended the alumni reunion dinner on May 22 at which the mortgage on the college property was burned by Dr. Ivor Griffith and Col. Samuel P. Wetherill, chairman of the Board of Trustees, after which the Alumni Association's "Man of the Year" citation was awarded to President Griffith. Nineteen members of the semi-centennial class were guests of honor. Louis Milner retired as president of the Alumni Association and Dr. Madeline O. Holland was installed in that office.—A cancer research grant has been awarded to Dr. Julian L. Ambrus.—Commencement week activities began on June 12th with the dinner honoring the senior students, continued on the 13th with the Baccalaureate services at the Woodland Presbyterian Church and concluded on the 14th with the Commencement exercises, at which time honorary degrees were granted to Ralph A. Connor, vice-president in charge of research of the Rohm and Haas Company; William J. Meinel, president of the Heintz Manufacturing Company; and Ernest Volwiler, president of Abbott Laboratories. The following degrees were granted: Doctor of Science in Bacteriology, to one; Doctor of Science in Pharmacy, to five; Master of Science in Pharmacy, to fourteen; Bachelor of Science in Bacteriology to two; Bachelor of Science in Biology, to two; and Bachelor of Science in Pharmacy, to one hundred and fifty-three. Two were designated as "Distinguished" and fourteen as "Meritorious." Twenty-four prizes for scholarship were awarded, eight of them going to one student. Seventeen of the graduates of the 1954 class are members of the Rho Chi Society.

University of Pittsburgh.—Dr. Herbert E. Lozeneccker, Dean of the Graduate School and of Research in the Natural Sciences was the speaker at the initiatory ceremonies inducting nineteen new members into Alpha Omicron chapter of Rho Chi on April 21. In addition to the students, memberships were presented to Dr. Louis Saalbach, emeritus professor of pharmacy; to Dr. Robert J. F. Palchak, assistant professor of pharmacy; and to Mr. J. Kinnard, graduate assistant in pharmacology.—Representatives of the AACP and the American College Public Relations Association met in Pittsburgh on April 26 and 27 and began planning a method of approach to the problem of better public relations for pharmaceutical education and, through this, for all of pharmacy. The AACP was represented by Dr. Glenn Sonnedecker and Prof. W. L. Blockstein and the ACPRA by Mr. John P. DeCamp, direc-

tor of public relations at the University of Cincinnati, and W. G. Wilcox, director of public relations at Ohio State University. A report of the committee work will be made at the Boston meeting.— Dean Reif and Dr. Robert W. Sager spoke to graduating seniors of the Erie County High School Districts on career opportunities in pharmacy. The invitation to speak was arranged by the management of the Eckert Drug Stores, who recently established a \$500 scholarship at the School of Pharmacy.— Dr. Edward Claus was a member of the faculty at a post-graduate course of the American College of Physicians at their Pittsburgh meeting. The subject of the course was "Diseases Due to Allergic and Immune Mechanisms." Dr. Claus supervised the laboratory session on identification of pollen grains and mold spores.— On Student Recognition Day awards were made to ten students for excellent scholarship or campus activities.— At the June commencement, sixty-three students were awarded the bachelor's degree; two with *summa cum laude*, and two with *magna cum laude*, and one with *cum laude*.— Instructors Samuel T. Cohn, W. J. Kinnard, and Paul J. Wurdock have been elected to membership in Phi Sigma, National Honorary Biology Society.— The following received the master's degree at the June commencement: Mrs. Jeanne Cappelli, in pharmacognosy; Mr. Richard Doughty, in Botany; and Mr. David Perleman in pharmacy administration.— The Society of Sigma Xi has granted full membership to Dr. Joseph A. Bianculli, and Clarence K. Williamson and associate membership to Miss Rose Goldfield and Mr. James Newcomb, respectively, instructors in chemistry and pharmacy.— During the last quarter several members of the faculty have had papers published in scientific journals and given radio presentations and talks before service clubs.— Mr. and Mrs. Barney B. Perifano have started a \$100 scholarship fund; the Women's Auxiliary of Alpha Zeta Omega Fraternity has given a \$25 scholarship; and the Eckard Drug Stores have instituted a \$500 scholarship, recently.

Purdue University.—At the May commencement, Purdue University conferred the degree of Doctor of Laws upon Dean Francis Norman Hughes of the University of Toronto. Dean Hughes was graduated by Purdue University in 1940 with the degree B.S. in Pharmacy, and in 1944 he received the M.A. degree from the University of Toronto. As a professor and later as dean of the Ontario College of Pharmacy, he led his school to become an integral part of the University of Toronto and to a high position in professional pharmaceutical education in the Dominion of Canada. As a science editor in professional journalism, as an author, as the secretary of the Canadian Conference of Pharmaceutical Faculties, as a leader in the Canadian Pharmaceutical Association, and in other ways, Mr. Hughes has rendered distinguished service to the advancement of his profession and has contributed to improve education, health, and welfare of his country. In awarding the degree, President Hovede made the citation: "Educator, editor and pharmacy leader in the Dominion of Canada. Distinguished for his contributions to the advancement of knowledge and wise guidance of

his profession in the war against disease."— Sixteen students were initiated into the Rho Chi Society at a banquet on May 6. Following the banquet, President Kolstad presented a portrait of Professor Charles O. Lee to the School of Pharmacy. Following the ceremony Dr. Lee gave an illustrated talk of his experiences in China. Also, at the banquet, scholarship awards to five students were announced.— Seven American Foundation for Pharmaceutical Education Fellowships have been renewed and three new ones granted to Purdue students.— A group of thirty students from the University of Saskatchewan visited the School of Pharmacy on May 5, on their way to a tour of the Lilly Laboratories.— Bruce Howland, a senior pharmacy student, has been selected for the Durward Kirby award for having made the greatest contribution to radio during a university career, having been working at station WBAA for three years.

Rhode Island College of Pharmacy and Allied Sciences.—At the fifty-third commencement, forty-two students were granted the bachelor's degree and four persons were awarded honorary degrees; two were given the honorary degree of Doctor of Pharmacy and two, the Doctor of Science. Fifteen prizes and scholarship awards were announced on this occasion.— The commencement address was delivered by Dr. Bruce M. Bigelow, Vice-President of Brown University.

Rutgers University.—The Third Annual Rutgers Pharmaceutical Conference, sponsored by the College of Pharmacy and the University Extension Division, was held on the Brunswick campus on May 12 and attended by 400 registrants. Its objective is to obtain "Progress Through Knowledge and Mutual Understanding." The Conference presents a national forum at which pharmaceutical educators, manufacturers, journalists, retailers, wholesalers, hospital pharmacists and members of the allied professions have an opportunity to hear and discuss with recognized authorities the professional and economic developments now affecting pharmacy and the public health and welfare. This year the speakers concentrated on such themes as future economic drugstore operation, the significance of the extended educational program on the future of pharmacy, the manufacturer's stake in the prescription department, the advantages to the public in restricting the sale of drugs and medicines to the retail store supervised by a registered pharmacist, and a stimulating open forum and panel discussion.— On April 14, the New Jersey Pharmaceutical Association sponsored a Conference on Pharmaceutical Education at the College which was attended by about 100 representatives from various branches of pharmacy within the state. The theme of the Conference dealt specifically with the educational program at Rutgers and various aspects were discussed by the members of the faculty. The program closed with an open discussion, town-hall style, on various phases of pharmaceutical education.— Prof. Cyrus L. Cox, who has been on the pharmacy staff for 26 years has gone on leave for one year, prior to his retirement next June. In recognition of his years of service, the faculty, student body, and vari-

ous fraternities presented him with farewell gifts and citations honoring his outstanding contributions to the College and the profession.— Dr. Paul Olsen has resigned as lecturer in business administration, a position he has held for 17 years. Other resignations are Mrs. Rosemary Osborne, assistant instructor in biological sciences and Mr. Fred Domier, instructor in pharmacy.— New appointments to the staff include: Dr. Arnold Marcus as assistant professor of pharmacy after graduation from the University of Wisconsin; Dr. Walter Wuggatzer who will hold a similar position after graduation from Purdue, having obtained the B.S., and M.S., from Rutgers before going to Purdue for the doctorate; Miss Elsie Mihaly, a recent graduate of the New Jersey College for Women, will join the department of biological sciences as assistant instructor.— Mr. R. G. Kedersha, B.S., and M.S. from Rutgers, has been granted the M.S. in Business Administration and has been promoted as assistant professor of pharmacy administration and made head of the newly created department of pharmacy administration. He will attend the Walgreen Seminar on pharmacy administration in Chicago in June. He has recently been elected to Beta Gamma Sigma, national honorary business fraternity.— Others gaining advanced degrees are Prof. James A. Kearns, who received the degree of Doctor of Education from Teacher's College, Columbia University, and Mr. Robert Buggelin, instructor in chemistry, who received the degree of Master of Business Administration from Rutgers.— Dr. Blake Putney has been appointed acting chairman of the pharmacy department.— Dr. Clarence A. Discher presented the third of a series of papers dealing with the physical properties of Tin II Sulfate Electrolytes, "Some Physical Properties of Tin II Sulfate Electrolytes and Their Role in the Electrodeposition of Tin" at the spring meeting of the Electro-Chemical Society in Chicago in May.— Dr. Morton J. Rodman spoke to officials of the Food and Drug Administration and Public Health Service in Washington early in June. A paper on "Control of Hospital Odors" by Dr. Rodman appeared in the March 1954 issue of R.N., a Journal for nurses.— On April 15, the Student Branch presented Detective Sergeant Witcoff, a Rutgers graduate, now of the State Police Narcotic Squad, who spoke on "Narcotics in Pharmacy and Medicine."— Dr. Harry Goldwag, professor of pharmacology, *materia medica* and therapeutics at Brooklyn College of Pharmacy, addressed a meeting recently sponsored by the Rho Chi Society on "Cooperation Between Pharmacy and Podiatry." Rho Chi also presented Dr. George Weber, professor of Art at the Newark Colleges, who spoke on "Art of the Modern World."— On May 20, a number of awards for scholarship were made at a special convocation.— Nineteen students were inducted into Rho Chi on April 23. Also inducted as an honorary member was Dr. Lloyd E. Blauch, Chief for Education in the Health Professions, Office of Education, U. S. Department of Health, Education, and Welfare.— Dr. Rodman presented a paper on "Poisoning by Household Chemicals" before the Committee on Pest-

cides of the Council of Pharmacy and Chemistry of the American Medical Association in Chicago in January.

South Dakota State College.—Dr. Guilford C. Grass was one of the five State College faculty members honored at a Faculty Recognition Dinner, May 10, for "able and inspiring teaching."—Dr. Grass has been selected as a faculty member in the field of pharmacology for the Teachers' Seminar in Pharmaceutical Education to be held at Storrs, Connecticut, August 15 to 21, 1954.—Thirty-six seniors were graduated on May 24. Of this number sixteen were commissioned as Second Lieutenants in the Medical Corps Reserve and are expecting to be called into service; the others have all secured employment in retail pharmacy.—Gerald R. Zins, '54, has accepted an assistantship at Purdue University where he will work for the doctorate in pharmacology.—Two pharmacy students were given awards for excellence in scholarship and three were elected to membership in Phi Kappa Phi during the year.—Dr. Harold S. Bailey is secretary-treasurer and Dr. Kenneth Redman is vice-president of the local chapter of Phi Kappa Phi.—At the Women's Day Activities held on May 12, Mary Ann Peterson and Mary Low Scheurenbrand, pharmacy students, were included in the ten high ranking freshmen women. Miss Peterson with a grade point average of 3.9726 out of a possible 4.0000 was high for the entire college.—Dean F. J. LeBlanc attended the Walgreen Seminar in Drug Store Management held in Chicago, June 21 through July 15.

Southern College of Pharmacy.—A faculty seminar stressing the teaching of science was sponsored by the H. Custer Naylor Library during the winter quarter. The program consisted of four sessions. At the first session Dr. Woolford B. Baker of Emory University Biology Department presented some Basic Considerations in the Teaching of Science. The second and third sessions were devoted to reports and discussions by members of the faculty. The following subjects were considered: Utilization of the AACP as a Teaching Adjunct, How the Experienced Teacher can help the Beginning Teacher, Literature Helps for the Science Teacher, The Administration Looks at the Teacher's Responsibilities, The Teacher Looks at the Administration's Responsibilities. The final session was devoted to a group discussion on How to Improve Science Instruction at Southern College of Pharmacy with Dr. Baker acting as moderator.—The Student Body and the Student Branch of the APhA held a joint meeting May 18 as the final meeting of the school year. Four senior students who have conducted research problems during the year gave brief reports on the progress and results of their work. Frank Ellzey is working on the Potentizing Effect of Anti-molding Agents in Syrup; Charles Blissitt on A New Pharmacological Method for Comparison of Atropine Substitutes; Walter Bubenheim on A Preliminary Chemical Study of Myriocapsilla Rafensque; and Perry Hawkins on The Synthesis of Hydrazide Derivatives to be Evaluated as Antitubercular Substances.—Two new courses will be added to the curriculum next year, viz., Special

Topics in Pharmacy and Isotope Pharmacy. The latter course will include both lecture and laboratory demonstrations.— The Georgia Pharmaceutical Association entertained the faculty and students at a dinner April 14. Mr. Bill Lee, President of the Association was the guest speaker.— Alpha Rho Chapter of Phi Delta Chi won second place in the National Pharmacy Week Window Display contest. A picture of the display and the announcement appeared in the March issue of the fraternity publication, *The Communicator*.— Through the efforts of the active Gamma Psi Chapter of Kappa Psi, a graduate chapter with twenty-five charter members has been organized. The charter was presented to this group at the annual banquet, May 7.— The College presented an outstanding display featuring The Role of the Pharmaceutical Profession in Cardiac Therapy at the 79th annual convention of the Georgia Pharmaceutical Association held April 19 to 21 at the Atlanta Biltmore Hotel. The students presented a skit in the form of a T.V. program under the direction of Dr. Wei-Chin Liu. Dean Melvin A. Chambers appeared on the program in a panel discussion on Pharmacy Curriculum.— Fifty-four seniors were awarded diplomas at the commencement exercises held June 11. Dr. Wallace M. Alston, President of Agnes Scott College, Decatur, Georgia, delivered the commencement address. The degree of Doctor of Pharmacy was conferred upon Mr. Thomas Daniel Wyatt of Spartanburg, South Carolina. Mr. Wyatt is widely known throughout the United States for his contributions to the profession of pharmacy, and his selection by the Board of Trustees for an honorary degree is but further recognition of his outstanding achievements. Mr. Wyatt was born in Central, South Carolina, on May 9, 1903. His father was a practicing pharmacist. Following his graduation from high school, he attended Wofford College and the Citadel. He completed his professional training at SCP in 1923. After his graduation he was employed as a registered pharmacist at Irwin's Drug Store, Inc., Spartanburg. In 1932 he became co-owner of the business and continues to serve it as secretary and treasurer. He became a member of the South Carolina Pharmaceutical Association and served on its Executive Committee from 1936 to 1940. In 1942 he was made a member of the South Carolina Board of Pharmacy. He served as its Chairman and Secretary from 1945 to the present. In 1948 he was commissioned chief drug inspector for the State of South Carolina. Mr. Wyatt was awarded the T.M.A. Plaque by the Traveling Men's Auxiliary of the South Carolina Pharmaceutical Association in 1949 for having rendered outstanding service to pharmacy. He has enjoyed long membership in the American Pharmaceutical Association, which organization he served as Vice-chairman of the House of Delegates in 1950. Other national professional organizations of which he is a member are National Association of Retail Druggists and the National Association of Boards of Pharmacy. The National Association of Boards of Pharmacy elected him Vice-president for 1952. In 1953 he became President of this National organization. Mr. Wyatt married Miss Arman-

tine Sanders of Gainesville, Georgia, on July 9, 1932. They have two sons, Thomas D., Jr., 19, a senior at Wofford College, and Erskine D., 14, a senior at Spartanburg Junior High School.

Southwestern State College, Oklahoma.—The annual Pharmacy Alumni Luncheon was held on April 23 with an attendance of forty-eight.—Twenty-nine students and faculty members attended the annual State Pharmaceutical Association meetings in Oklahoma City.—On April 26, Dr. Hamm of the Oklahoma Medical Research Foundation, told of his researches on hormones before the Student Branch.

Temple University.—Mr. John A. Lynch, assistant professor of pharmacy and pharmaceutical chemistry, has been elected treasurer of the Philadelphia Branch of the APhA.—Dean J. B. Sprowls has retired as president of the Temple University chapter of Sigma Xi.—Dr. Fritz O. Laquer, associate professor of biochemistry, has been elected to membership in Sigma Xi. Dr. Laquer is completing a book, "A Philosophical Basis of Science".—Dr. Arthur James spoke recently before the York County Pharmaceutical Association on the subject, "Pharmacy's Horizons". Dr. James represented Temple University at the one-hundredth anniversary of the founding of Lincoln University at Lincoln, Pennsylvania. Founded in 1854, it is the oldest institution in America for the higher education of the negro.—Dr. H. M. Cobe, professor of bacteriology attended a conference at Columbia University in June devoted to the study of professional teaching methods. He attended the meeting of the American Chest Physicians and the American Medical Association in San Francisco and gave a paper on penicillin blood levels. He is spending the summer in Mexico. Mrs. Frances M. Wilson, instructor in pharmacy, has received the A.B. degree from the University of Pennsylvania, majoring in English.—Sidney H. Abramson, instructor in pharmacy, will begin studies in medicine at the Jefferson Medical College in September.—Dr. Frank Eby has been elected Grand Secretary-Treasurer of Kappa Psi to replace Prof. Ray S. Kelley, who died in March.—Dr. A. J. Vazakas has been named faculty advisor to the Student Branch. In May, Temple University was host to the annual convention of the student branches of District Nos. 1 and 2.—The new Frank Law Laboratory for pharmaceutical manufacturing was dedicated in May. Dr. Karl Bambach, executive vice-president of the American Manufacturers Association was the speaker. Wyeth Laboratories provided the funds for equipping the new laboratory with a modern pilot plant. Mr. Law was an alumnus of the school, class of 1917. After World War I he joined the Wyeth firm and in 1934 was made vice-president and remained in that position until his death.—Instructor J. A. Marlino has resigned in order to accept employment in the pharmacy department of the Smith, Kline, and French Research Laboratories.—At the meeting of District No. 2, Boards and Colleges, at Pocono Manor, Pennsylvania, in March, Dean Sprowls took part in the discussion of the five-year program; Dr. Harold Reppert, director

of the Testing Bureau reported on the success which has been achieved through the use of predictive tests with prospective pharmacy students; and Dr. Alfred Martin took part in a panel discussion of pharmaceutical mathematics.

University of Texas.—Forty-three seniors were awarded the bachelor's degree at the June commencement. Dr. J. P. Gray, medical consultant, Parke, Davis and Company, gave the address. Scholarship awards were presented to five seniors. Rho Chi received three graduates and six undergraduates into active membership, and honorary membership was conferred upon Mr. Walter D. Adams of Forney, Texas, past president of the APhA. A portrait of Prof. W. R. Neville, painted by one of his former students, Albert Papa was presented to him during the commencement ceremonies.—The members of the senior class made an inspection trip to the Lilly Laboratories and the Walgreen Company in Chicago during the Easter holidays.—Dean H. M. Burlage, Dr. C. O. Wilson and Mr. W. E. Woods attended the Management Conferences, held under the newly established Pharmacy Extension Service, which were held at Corpus Christi and El Paso in May.—The Graduate Council has approved the application of the College of Pharmacy to offer graduate work leading to the doctorate. At present Mr. V. A. Green, M.S., assistant professor of pharmacology is registered for the doctorate. Three students are now candidates for the master's in pharmacology and three in pharmacy.—A dinner was given honoring Profs. W. F. Gidley and W. R. Neville on May 7, in recognition of their long services to the university, both having reached the term of modified service, Prof. Neville in 1953, and Prof. Gidley, during the current year. The dinner was sponsored by students, faculty and their friends.—Prof. Gunnar Gjerstad has returned to Purdue University to complete his dissertation for the doctorate. In August he will go to Norway in accordance with Fullbright Fellowship Requirements.—T. E. Jones, assistant professor of pharmaceutical chemistry has obtained leave for the coming year to complete work at the University of Colorado for the doctorate in chemistry.—Prof. C. C. Albers and family motored to Washington, D. C., during June to attend a meeting of the board of education of his church.

Texas Southern University.—Students and faculty members who went on an educational tour to Merck and Co., Sharp and Dohme, and E. R. Squibb, had an opportunity to visit the office of *Drug Topics* while in New York. On the return trip they were the guests of the Student Branches at Howard University in Washington, D. C., and Xavier University in New Orleans.—Six seniors were graduated on May 31. Three others will complete the requirements for graduation in August.—Robert Albert, top honor student of the senior class, received a \$100 Texas Drug Travelers Award, the Merck Award and the Houston Pharmaceutical Association Award.—The graduating class presented the school with a complete set of aluminum ware for use by the students

in the kitchen of the conference room.—Mr. W. A. Sibley, assistant professor of pharmacology, was elected president, and Mr. Robert Scarborough, instructor in pharmacy was elected secretary of the Houston Pharmaceutical Association. All members of the faculty, except the dean, are attending summer school or gaining practical experience in pharmacies. No course work is being offered in pharmacy, in the summer.

University of Utah.—Mr. Robert Bushman, a leading pharmacist in Provo, Utah, has joined other leaders in the state in helping to support *The Pharmic Ute*, the Student Branch publication, by contributing to its advertising pages.—Since the value of one year of apprenticeship is commonly accepted as a part of the pharmacy student's education, an editorial in the Spring (1954) edition of *The Ute* states that it is the belief of the student body that the apprenticeship should be served either entirely after graduation or, at least after the completion of the junior year. This would enable the student to utilize the knowledge and training acquired in school in carrying out the practical work in the store. The acceptance of either of their programs would be beneficial in improving the educational program which is the intent of the apprenticeship system.—In March, 54 students toured the Lilly, the Parke, Davis plants and visited two modern drug stores of the Walgreen Company in Chicago.—Seeking to promote greater participation of pharmacy students in campus activities, the Student Branch has joined the Central Council of Independent Student Organizations. The purpose of the latter organization is to stimulate independent organization to take a greater part in student affairs.—On March 15, a testimonial dinner was given in honor of Dean L. David Hiner by students, faculty and friends, in recognition of his services to pharmacy within the state of Utah. President of the University, Dr. A. Ray Olpin and Mr. J. B. Heinz, president of the Utah State Board of Pharmacy and first vice-president of the APhA were the principal speakers of the evening. Dean and Mrs. Hiner were presented with a silver serving tray, properly inscribed as a tribute to Dean Hiner's work. Mr. Alvin L. Gittins, assistant professor of art at the university, was commissioned to do a portrait of Dean Hiner. The portrait was unveiled on May 17, and will hang in the lobby of the college as a memorial to the man who has contributed so much to pharmacy within the university and the state.—Seven new members were initiated by Phi Delta Chi in May.—Dr. George E. Osborne has been awarded a Ford Foundation Fellowship for further study in pharmacy. Study will be pursued at the University of Wisconsin in areas of history of science, history of medicine, and history of pharmacy, correlating insofar as possible, these fields.

School of Pharmacy, Medical College of Virginia.—Professor Frank P. Pitts has been named assistant dean of the school of pharmacy.—Dr. R. Blackwell Smith, Jr., will assume the office of assistant president of the Medical College of Virginia on July 1. He will continue to serve

as dean of the school of pharmacy. It is expected that Dean Smith will become president upon retirement of Dr. William T. Sanger, scheduled for July, 1956.—Dr. Warren E. Weaver has been made full professor of pharmaceutical chemistry and continues to head that department.—Mr. Charles J. Ashby was granted the Master of Science degree in Pharmaceutical Chemistry at the June 1 commencement. The dissertation was done on the gamma bromination of crotonic acid and its derivatives, under the direction of Dr. Warren Weaver. This is the first graduate degree awarded in this field at the Medical College. Mr. Ashby has been added to the staff in the pharmaceutical chemistry department.—Forty-eight seniors were graduated with the degree of Bachelor of Science in Pharmacy at the commencement exercises on June 1. Miss Pearl Lindsay was the recipient of the Lehn and Fink Medal as well as the Merck Award in pharmacy. Mr. Joseph Arcaro received the Merck Award in chemistry.—Mr. Charles Rosko, a graduate of the University of Pittsburgh School of Pharmacy, has been accepted by the Committee on Graduate Study. Mr. Rosko will come to the Medical College of Virginia on August 15 to begin work in the program leading to the degree, Master of Science in Hospital Pharmacy.—Mr. Linwood Payne, Jr., one of our own graduates of this year, will begin work in September on the Master of Science degree in pharmaceutical chemistry.—Renovation of McGuire Hall, which houses the school of pharmacy, is now in progress. The school of pharmacy will gain new laboratories, offices, classrooms, and research facilities.

State College of Washington.—Drs. Gibson, Hammerlund and Bhatia presented papers at the meeting of District No. 7 at Seattle in April. Their topics were respectively: Educators of the Future; Biological Products—The Nature and Need of this Course; and A Report on a Survey of Pharmacy Educators and Deans Regarding the Degrees to be Conferred on the Graduates of Five and Six Year Pharmacy Curricula.—Mr. Laurence E. Gale, acting instructor in pharmacy for the current year has received the doctorate in pharmacology and will join the staff of the Idaho State College at Pocatello.—The faculty is devoting much time to the study of the five year plan which may be adopted in the near future.—The new dispensing laboratory is nearing completion and is being equipped with new Torsion balances and with hot plates.—A new plant processing laboratory is being built in the pharmacognosy laboratory. The equipment will include an automatically controlled steam-heated drying cabinet. Dr. V. N. Bhatia has been appointed hospital pharmacist at the University of Iowa Hospital for a period of three months during the summer.

University of Washington.—The University of Washington College of Pharmacy this year established a Pharmacy Week of its own for all senior class activities. The seniors selected the week of May 21-25 as the time during which they wanted their official luncheons, picnic, tug-of-war across Frosh Pond with the chemists, banquet, and field

trips. The week proved highly successful and was given considerable publicity on the campus and in the Seattle newspapers. The college was host to District No. 7 April 29 and 30. Attendance was excellent and everyone felt that much had been accomplished. Post-graduate education at the retail level is now a cooperative enterprise shared by the University and the State College. Dr. L. Wait Rising is the general chairman of the program which is put on by a sub-committee functioning on whichever campus the program is scheduled for the year. This year Washington State College was host. Great promise is held for the joint enterprise. The Women's Auxiliary of the Washington State Pharmaceutical Association, Seattle Branch, gave the college \$200.00 for scholarships at its last meeting. Two seniors, Mrs. Ulla Forstrum and James Gordon were elected to the Society of the Sigma Xi and Phi Beta Kappa. Dr. James Fairbairn and Mr. F. Maurice Clark will return to England this summer. Dr. Fairbairn has been visiting professor of Pharmacognacy and Mr. Clark was a Fulbright student working for his Master's degree in Pharmacy.

Wayne University.—Seven members of the Student Branch attended the District 4 convention at Purdue University in May. President F. Royce Franzoni was the main speaker.—The senior class visited the Parke, Davis Company on May 21.—The highlights of the Honors Convocation, held on May 20, was a talk by Mr. Albert R. Pisa on "Pharmacy—Retrospect and Prospect" and the presentation by Mr. William Bobrin of a check for \$1000 to the University in behalf of the Rho Pi Phi Fraternity for its scholarship fund. Both men are retail druggists. Mr. Pisa hit the keynote of the Convocation in his talk as he graphically told of the changes that had taken place in the last twenty years. Contrasting conditions of five, ten, fifteen, and twenty years ago with the present, by means of well chosen illustrations, he indicated very clearly that change is the most constant factor in the development of pharmacy in the future and that a sound education does not result from the graduate being a finished product, but rather results from the graduate being equipped with an understanding of basic principles which would enable him to continue learning throughout his life and keep pace with the changes as they occur in the future. Mr. Bobrin also made an eloquent plea for higher scholarship on the part of pharmacy students as he presented the check for the Scholarship Fund. Another innovation was the presentation by Mrs. Edward Rothenberg of the Alpha Zeta Omega Fraternity Award for the first time. The other awards were made for high scholarship and the recipients of two awards made earlier in the year were introduced as were the members elected to the Rho Chi Society.

West Virginia University.—The Alpha Mu Chapter of Rho Chi recently initiated five new members at a banquet held in their honor.—Over two hundred attended the annual alumni banquet which was held on May 30. This marked the 40th anniversary of pharmacy instruction

at the university. The guest speaker was Dr. Paul C. Olsen whose topic was "Today's Opportunities in Retail Pharmacy". Awards were granted to four students for superior scholarship.—At the Mother's Day Sing, sponsored by Sphinx, Andrew F. Shelton, a first year pharmacy student, received a certificate as one of the ten freshmen having the highest scholastic average in the entire university.—Twenty seniors were graduated on May 31.

University of Wyoming.—Dean David W. O'Day told of the excellent progress which is being made in the organization of district associations in Wyoming before the Wyoming Pharmaceutical Association at Cody in June. Dean O'Day also gave a paper at the meeting of District No. 7 at Seattle in April, entitled "A Consideration of the Discretionary and Inherent Powers of the State Boards".—Raymond J. Kahl is pursuing work toward the doctorate in chemistry at the University of Washington, and William E. Johnson is working toward the doctorate at the Washington State College under an American Foundation for Pharmaceutical Education Fellowship. During the summer months, Mrs. Ramona Parkinson is conducting research at Ohio State University toward the doctorate in business administration.—Dr. Theodore O. King presented a paper on his recent researches before a Section of the American Society for Pharmacology and Experimental Therapeutics at the April meeting in Atlantic City. During the summer, Dr. King is attending the Law School at the University of Wisconsin.—Prof. C. H. Thompson, head of the testing service for the college, recently was awarded the degree of Doctor of Education by Michigan State College.—Dr. Jack Bone attended the Walgreen Seminar on Drug Store Management in Chicago in June.—Dean O'Day, Dr. Jack Bone, and Prof. R. J. Kahl cooperated with other representatives of the University in a special High School Visitation Program in different Wyoming cities during the spring quarter.—Thirty-three students made the annual tour of the Lilly, the Parke, Davis plants and the Abbott Laboratories in April.—Dr. Irene Rosenfeld, research pharmacologist at the Wyoming Agricultural Experiment Station, was recently granted \$9,3000 by the Atomic Energy Commission for a continuation of the study of the effects of poisonous plants on animals. This is the fifth grant made to Dr. Rosenfeld by the Commission, making a total of \$42,000 for this project.

Xavier University.—At the annual banquet for the graduating class held on May 19, the third annual Practical Award was given to Langston Reed, a graduate of Xavier, by the New Orleans Progressive Drugists Association. In winning the award Mr. Reed amassed the highest point score among the six candidates who participated in the written examinations. The candidates were also under observation during their practical experience by a team consisting of pharmacists, a doctor, and a dentist.—The ladies' auxiliary of the Progressive Association presented gifts to the women graduates of the 1954 class.—The college presented a Refresher Course for pharmacists on April 19, 21, and 23.

A unique feature was the hours of the course, which started each morning at 6:00 A.M. The early hour permitted the attendance of many pharmacists whose business would not have allowed them to participate at a later time during the day. The subjects presented had been selected previously by means of a survey of the needs and desires of the pharmacists. The topics chosen included lectures on the pharmacology of new drugs, drug store management, public relations, prescription problems and pharmacy of drugs, accounting, detailing, mathematics, dentistry with pharmacy, and public health. In attendance were pharmacists whose professional experience dated from the turn of the century to members of last year's graduating class. Twenty-five certificates of merit were presented by Dean Lawrence Ferring. Mr. Warren McKenna of the faculty, was director of the course and has announced that plans are already in the making to expand the course next year.—Mr. McKenna was invited to speak at the annual meeting of the Louisiana Pharmaceutical Society in Baton Rouge on June 3, 1954. He discussed the recent trends in public health.

The Medical Library Association at its 53d annual meeting in Washington, D.C., in June, elected the following officers: President, Miss Wilma Troxel, Quine Library of Medical Sciences, University of Illinois Medical School, Chicago; Vice President (President-elect), Mr. Wesley Draper, Librarian, Medical Society of the County of Kings and Academy of Medicine of Brooklyn; Hon. Vice President, Dr. E. H. Cushing, Washington, D.C.; Secretary, Miss Esther Judkins, Rockefeller Institute for Medical Research, New York; Treasurer, Miss Pauline Dufield, Librarian, State Medical Association of Texas, Austin; to Board of Directors, Miss Clara S. Manson, Stanford University Medical School, San Francisco; Mr. Robert T. Lentz, Jefferson Medical College, Philadelphia. The 1955 meeting will be held in June at Marquette University School of Medicine, Milwaukee, Mrs. Edith Dernehl, Librarian.

The Eli Lilly Company has supplied the pharmaceutical press with a series of most interesting photographs showing a shipment of monkeys imported from India for the production of polio vaccine. The photographs were accompanied by the following caption which shows the great care being given animals which are to be used in the production of the Salk vaccine:

"Peering from their shipping crates after a 12,000-mile journey from Northern India, these little monkeys inspect their new quarters in the monkeyhouse at Eli Lilly and Company in Indianapolis. Lilly's has transformed the second floor of Building 50, where blood plasma was processed, into a "Waldorf-Astoria" for the simians. Made of gleaming tile and link-chain mesh, the cages are equipped with automatic water dispensers which the monkeys learn to operate almost by instinct. The air on the entire floor is changed every two minutes without creating a draft. Monkeys are essential in the production of the Salk polio vaccine. Lilly's is devoting the entire five-story building to the production of the vaccine for the 1955 polio season."

Miscellaneous Items of Interest

A MEMORIAL

DONALD W. HARDING

Donald William Harding was born at Tipton, Indiana, on June 25, 1922. He died in the St. Elizabeth Hospital in Lafayette, Indiana on April 13, 1954 as a result of a cerebral hemorrhage. He was the youngest of two sons born to Cecil P. and Laurel (Bower) Harding. Funeral services were held at the Rogers-Myers Funeral Parlors on April 16, with burial in Oak Hill Cemetery at Kirklin, Indiana. Surviving are his wife, a daughter Janet, age 3; a son Joseph, age 6 months; his mother, and his brother.

Education and Career

Professor Harding received his early education in the public schools at Kirklin, Indiana, and graduated from high school in 1940. He entered Purdue University School of Pharmacy and received the degree of Bachelor of Science in Pharmacy in January, 1944. After a short interval in a retail pharmacy, he entered the Armed Forces where he was on active duty for a total of 41 months, serving first as an enlisted man in the field artillery of the United States Army and later attending Officer's Candidate School at Fort Sill, Oklahoma, where he was commissioned a 2nd Lt. in June of 1944. From 1945 to 1946 he served in Japan and the Philippine Islands. Upon his return to civilian life, he worked in a retail pharmacy in Lebanon for one year. From there, he moved to Fort Wayne and served that community as a registered pharmacist until 1950 when he joined the staff of Purdue University as an Assistant Professor of Pharmacy. He was in charge of extension activities and public relations for the Purdue University School of Pharmacy. It was Professor Harding's responsibility to extend the facilities of the School of Pharmacy to the practicing pharmacists throughout the state of Indiana and to coordinate relationships between the school and its graduates.

Professor Harding also organized and promoted the annual Drugists Business Conference in the fall of each year, and the Professional Pharmacy Clinic in the spring of each year. He also served the University as an advisor and schedule chairman for the undergraduate students who had come to admire and respect him.

In addition to his assigned activities, Professor Harding found time to serve as Secretary of the Rho Chi Society, as one of the faculty sponsors of the student publication "The Purdue Pharmacist", and as a member of the Board of Directors of Kappa Psi Pharmaceutical

Fraternity, Incorporated. He wrote and edited a page in the Journal of the Indiana Pharmaceutical Association every month and acted as Chairman of the Public Relations Committee of the State Association.

Professor Harding's career in the service of pharmacy was interrupted in June of 1951 when he was recalled to active duty in the United States Army. He spent 16 months in Germany as a 1st Lt. in the field artillery and was discharged from the United States Army Reserves on April 1, 1953. Upon completion of his duties, he returned to resume his activities in the University.

Professor Harding suffered a cerebral hemorrhage during a banquet of the Professional Pharmacy Clinic, which was one of his most successful activities for the School of Pharmacy, and his loss is deeply felt.

Membership In Organizations

Professor Harding was a man who believed in living his profession and supporting it. He was an active member of the American Pharmaceutical Association, The Indiana Pharmaceutical Association, and the Lafayette Drug Club. He belonged to Kappa Psi Fraternity, Rho Chi Society, and was a member of the Masonic Lodge in Lebanon and the Tokyo Bay Masonic Club. He was the author of several published papers relating to extension activities in adult education, and he appeared regularly as a guest speaker at various association meetings throughout the state.

A Man With Many Friends

To everyone who once met Professor Harding, he became a friend. Those of us who worked with him considered him not only as a helpful associate and congenial worker, but also as a personal friend.

Professor Harding liked people. His friendly and enthusiastic reception were prime factors in the establishment of the growing reputation of the Extension Department. He loved the profession of pharmacy and the people who practiced it, and he was a champion of public service through professional service. His many contributions to the profession of pharmacy mark him as one who loved his fellow man.

Although Pharmacy was his main interest, by his very nature Professor Harding had other and varied activities. He was a staunch supporter of the Armed Forces and a firm believer in the American way of life. He was an amateur photographer and had built up a large collection of colored slides from his travels around the world. His interests were of great diversity; he liked classical music and popular music, and he continually strove to be well read both in fiction and professional literature.

He was a man of good character, temperate habits, and above all, he was a good husband and a loving father.

The members of the staff of the School of Pharmacy consider it a privilege to have worked with Professor Harding and shall treasure the

many pleasant memories he leaves with us.—The Memorial Committee: H. G. DeKay, R. V. Evanston, G. J. Sperandio, Chairman.

The Program for the 1954 Meeting of the Pharmacy Section of the American Association for the Advancement of Science.

A call has been made for papers for the program of the Pharmacy Section of the AAAS to be held in Berkeley, December 26-31, 1954. All titles must be in by September 15, if they are to be included in the printed program.

Information relative to the presentation of papers should include need of a lantern or other equipment; the presentation should not require more than 20 minutes, although the paper may be longer; three copies of a 100 to 200 word abstract of the paper should be sent in by October 1; one original and one carbon copy in form for publication should be turned in at time of presentation; papers may be released for publication in the journal of the author's choice.

Several awards and grants, for \$1,000 each are to be made this year for noteworthy papers presented at a regular meeting and representing an outstanding contribution to science.

Send titles to Dr. Glenn L. Jenkins, Purdue University, Lafayette, Indiana, or to Dr. Donald C. Brodie, University of California Medical Center, San Francisco, California.

The Annual Meeting of the American Institute of the History of Pharmacy

The annual meeting was held on April 1, 1954 at Madison, Wisconsin. The re-stated articles of incorporation to make them subject to Chapter 181 of the Statutes of Wisconsin was adopted. The proposed By-laws, as revised in 1954 for the conduct of the Institute's affairs, was approved. The report of the Director covering the activities of the Institute for the year following the 1953 meeting was presented and future plans were discussed. The Secretary's report showed a total paid membership of 327 which is a gain of 82 since the last meeting. The report covered the support which has been given the Institute during the past year, an account of the Secretary's European trip last summer, and matters concerned with the awarding of the Urdang Medal in the future. The minutes of the meeting are extensive and given in detail and may be obtained by addressing Secretary Glenn Sonnedecker, University of Wisconsin, Madison, Wisconsin.

The Twelfth Annual Meeting of the American Foundation for Pharmaceutical Education

The following announcement concerning the April 12, 1954 meeting of the Foundation has been released by Executive Director W. Paul Briggs.

Dr. Robert L. Swain, Editor, Topics Publishing Company, was re-elected President of the American Foundation for Pharmaceutical Edu-

cation at the 12th Annual Meeting of the Foundation held at The Biltmore, New York City.

James J. Kerrigan, President of Merck & Co., Inc., was re-elected Vice President.

Other officers, all re-elected, are Howard B. Fonda, Senior Vice President, Burroughs Wellcome & Co. (U.S.A.) Inc., Treasurer, James F. Hoge, of Rogers, Hoge & Hills, Counsel, and W. Paul Briggs, former Dean, The George Washington University, Secretary.

Elmer H. Bobst, Chairman of the Board, Warner-Hudnut Inc.; George B. Burrus, President, Peoples Drug Stores, Inc.; John L. Davenport, Executive Vice President, Chas. Pfizer & Co., Inc.; Smith Richardson, Jr., Vice President, Vick Chemical Company; Linwood F. Tice, Assistant Dean, Philadelphia College of Pharmacy and Science; John J. Toohy, Executive Vice President, E. R. Squibb & Sons, Division of Mathieson Chemical Corporation; and Edward T. T. Williams, President, The Lambert Company, were elected Directors of the Foundation.

George F. Smith, President, Johnson & Johnson, was re-elected as Director.

Dr. Daniel Z. Gibson, President, Washington College, was elected a member of the Board of Grants, and Dr. Ernest Little, Dean Emeritus, Rutgers University, was re-elected a member. Other members of the Board of Grants are: Dr. A. J. Brumbaugh, President, Shimer College, Charles J. Lynn, Vice President, Eli Lilly and Company, and Robert Lincoln McNeil, President, McNeil Laboratories, Inc. Dr. Little serves as Chairman of the Board of Grants.

C. S. Beardsley, Chairman of the Board, Miles Laboratories, Inc.; Richard A. Deno, Professor, University of Michigan; Charles D. Doerr, Vice President, McKesson & Robbins, Inc.; H. A. B. Dunning, Chairman of the Board, Hynson, Westcott & Dunning, Inc.; Harry J. Loynd, President, Parke, Davis and Company; Hugo H. Schaefer, Dean, Brooklyn College of Pharmacy; and Charles R. Walgreen, Jr., President, Walgreen Drug Stores, were elected to the Executive Committee, serving with the officers of the Foundation.

George V. Doerr, Vice President of McKesson & Robbins, Inc., is Honorary President of the Foundation.

In his Presidential Address, Dr. Swain reviewed the growth and accomplishments of the Foundation, expressed appreciation for the growing support being received from all segments of the industry, and said that "membership in the Foundation has now become a badge of distinction." He said that "professional education plays an utterly indispensable role . . . in the complicated and highly diversified activities which the drug industry carries on." President Swain announced a recent bequest to the Foundation from the late Gustavus A. Pfeiffer and a Memorial Fund to the late Director, S. Barksdale Penick. He called upon the industry to assume its full obligation "in building an

educational system devoted to the betterment of pharmacy in all its parts."

Dr. Gibson addressed the Foundation's annual Patrons Appreciation Luncheon, speaking on the subject "Professional Education—A Vital National Asset." He called for deeper appreciation of the part that education has played in the development of the United States, and pointed to the indebtedness of American business to our colleges and universities. Dr. Gibson ranked our system of professional education with the most precious of our national holdings. The affair was attended by approximately 100 Directors and industry Patrons.

Mr. Knox Ide, New York attorney, and formerly President of American Home Products Corporation, moderated a panel discussion, at the close of the Board of Directors Meeting, under the title "The Foundation and The Future." Panel members were Edgar S. Bellis, Charles D. Doerr, Richard A. Deno, and William H. McLean.

A budget of \$205,000 was approved by the Board of Directors in support of the educational projects of the Foundation for 1954-55.

The Foundation has aided 971 undergraduate students in 49 colleges of pharmacy. Also, it has supported the Ph.D. studies of 222 graduate students in the scientific fields related to pharmacy.

It is currently maintaining 64 graduate Fellowships in 29 universities. 122 Foundation Fellows are now teaching in 49 colleges, and 52 Fellows are engaged in research work with 31 manufacturing chemical and pharmaceutical firms. During the current academic year, the Foundation awarded 141 undergraduate scholarships in 46 colleges.

The Foundation also supports The American Council on Pharmaceutical Education, annual Teachers' Seminars and The American Journal of Pharmaceutical Education. It administers the E. L. Newcomb and S. B. Penick Memorial Awards.

The Foundation is supported by nearly 200 of the leading firms of the drug trade and industry.

The Association Members of the Foundation are:

American Association of Colleges of Pharmacy
American Drug Manufacturers Association
American Pharmaceutical Association
American Pharmaceutical Manufacturers' Association
Federal Wholesale Druggists' Association
National Association of Boards of Pharmacy
National Association of Chain Drug Stores
National Association of Retail Druggists
National Wholesale Druggists' Association
The Proprietary Association

Directors continuing in office are:

L. D. Barney, President, Hoffman-La Roche Inc.
C. S. Beardsley, Chairman of the Board, Miles Laboratories, Inc.
Edgar S. Bellis of Bellis Pharmacy

Francis Boyer, President, Smith, Kline & French Laboratories
Francis C. Brown, President, Schering Corporation
Alvin G. Brush, Chairman of the Board, American Home Products Corporation
W. L. Dempsey, President, Sharp & Dohme Incorporated
Richard A. Deno, Professor, University of Michigan
F. S. Dickinson, Jr., President, Becton, Dickinson & Company
Charles D. Doerr, Vice President, McKesson & Robbins, Inc.
H. A. B. Dunning, Chairman of the Board, Hynson, Westcott & Dunning, Inc.
Howard B. Fonda, Senior Vice President, Burroughs Wellcome & Co. (U.S.A.) Inc.
J. Mark Hiebert, Vice President, Sterling Drug Inc.
W. Rutherford James, President, Towns & James, Inc.
James J. Kerrigan, President, Merck & Co., Inc.
J. Preston Levis, Chairman of the Board, Owens-Illinois Glass Co.
Eli Lilly, Chairman of the Board, Eli Lilly and Company
Harry J. Loynd, President, Parke, Davis & Company
W. G. Malcolm, President, Lederle Laboratories
Hugo H. Schaefer, Dean, Brooklyn College of Pharmacy
Ray C. Schlotterer, Secretary, Federal Wholesale Druggists' Association
John G. Searle, President, G. D. Searle & Co.
Robert L. Swain, Editor, Drug Topics and Drug Trade News
Ernest H. Volwiler, President, Abbott Laboratories
C. R. Walgreen, President, Walgreen Drug Stores
George L. Webster, Professor, University of Illinois
Louis C. Zopf, Dean, University of Iowa

The American Foundation for Pharmaceutical Education Board of Grants, on May 19, 1953, awarded new graduate Fellowships and Teaching Fellowships to 31 applicants for graduate study at 16 universities. The major subject of 6 is pharmacology, 2 in pharmacognosy, 9 in pharmacy, 11 in pharmaceutical chemistry, and 3 in business administration. The Board also renewed 35 Fellowships and Teaching Fellowship grants for continuation of graduate studies; a total of 66 graduate students receiving Foundation support for 1953-54, at 24 universities. The Board also authorized \$18,000 for undergraduate scholarships in all accredited colleges of pharmacy for the academic year, 1953-54. This is an increase over the authorized funds for the same purpose last year, when more than 135 students at 42 colleges received financial aid from the Foundation.

Leslie M. Ohmart to Receive 1954 Lascoff Award

President Louis B. Longaker of the American College of Apothecaries announced today that Leslie M. Ohmart of Boston, Massachusetts, has been elected as the 1954 recipient of the J. Leon Lascoff Memorial Award, by the Award Committee. Presentation of the award will be made at the Annual Banquet of the American College of Apothecaries, which will be held Monday evening, August 23rd, in Boston as part of the College's Annual Convention.

Mr. Ohmart was born in Pittsburgh, Kansas on January 5th, 1901, and received the degree of Ph. G in 1923 from the Massachusetts College of Pharmacy. In 1924, he earned the Ph.C. at the same institution and in 1933 received the degree of B.S. from Boston University. He also received, from the latter institution in 1939, the A.M. Degree. He has served in the United States Navy and as a reserve officer in the Medical Administrative Corps of the United States Army.

At the present time, he is Professor of Pharmacy and Chairman of the Department of Pharmacy of the Massachusetts College of Pharmacy and also lecturer on Pharmacology at Harvard University, School of Dental Medicine.

As co-author of the book, "American Pharmacy—Volume 1" and "Pharmaceutical Compounding and Dispensing," he is well known to pharmacists and students of pharmacy throughout the country. Mr. Ohmart has published widely in the field of dispensing pharmacy and is author and co-author of approximately 20 published papers in that field. He has appeared on many programs throughout the country and has brought a great deal of practical information to many pharmacists.

He has served as Secretary and Chairman of the Section of Education and Legislation of the American Pharmaceutical Association and as President of the Boston Drug Association. He is a member of the Massachusetts State Pharmaceutical Association, the Rho Chi Society and of the Phi Delta Chi Fraternity. He is a member of the Revision Committee of the United States Pharmacopeia and has contributed greatly of his time and energy to many pharmaceutical and civic organizations.

New Books

The Pharm-Assist Manual by A. E. Slesser, B.S., M.S., Ph.D., Professor of and Head of the Department of Pharmacy and Assistant to the Dean, University of Kentucky College of Pharmacy. 1953. 167 pages. The C. V. Mooby Company. Price \$3.50.

This volume was written for the very purpose the title indicates—to assist the pharmacist, whether student or practitioner. The contents is divided into five parts. Part I deals with strictly pharmaceutical problems such as common synonyms, prescription abbreviations, gen-

eral compounding considerations, common compounding problems, and prescription incompatibilities. Part II covers the field of pharmaceutical calculations. Parts III and IV discusses the pharmaceutical problems germane to inorganic and organic chemistry, respectively. Part V is labeled "Materia Medica," a term which in this age of specialization is a misnomer. We should get away from the use of that term because it brands the chapter as belonging to an earlier generation and that's unfair to this manual for it is as modern as anything could be. Part V deals with the therapeutic uses of drugs by chemical classes and gives the therapeutic classification of the organic drugs of U.S.P. XIV and N.F. IX and those affecting the autonomic system. It includes the therapy of hormones and tables of vitamins. The manual will be found useful for the purposes of review and as a source for quick reference.—R.A.L.

Pharmacology and Therapeutics in Nursing by Marion S. Dooley, A.B., M.D., Professor Emeritus of Pharmacology, College of Medicine, Syracuse, State University of New York, College of Medicine, and Josephine Rappdport, R.N., M.A., Assistant Professor of Nursing Education, Duke University, 1953. Second Edition. 486 pages. 36 illustrations. McGraw-Hill Book Company, Inc., Price \$4.50.

This edition represents an extensive revision and rewriting of the first edition and the inclusion of the antibiotics which in recent years have become so important. New chapters have been written on the antihistamines which have been found useful drugs and on the use of penecillin in the treatment of syphilis and other spirochetal diseases. Not only the usefulness of these drugs are discussed but the dangers connected with their use are emphasized. In the first edition of the text the authors expressed the opinion that the correlation of material is indispensable to all-around pertinent nursing care of the patient. In the present edition they say, "If all factors relating to the patient are knitted into a compact nursing-plan, the nurse will be able to provide meaningful care for each patient according to the total situation. Thus it follows that all aspects of the nursing program, e.g., medical nursing, surgical nursing, diet therapy, pharmacology, therapeutics, and the like become part of a comprehensive understanding of the patient's needs and the community resources. It is hoped this text may contribute to the development of such unified care." The reviewer believes that the authors, in writing the text have done well in accomplishing their objective which is an ideal one.—R. A. L.

Plant Genera—Their Nature and Definition, A Symposium by G. H. M. Lawrence et al., with an Editor's Foreword by Dr. Frans Verdoorn, and an Introductory Essay; Generic Synopses and Modern Taxonomy by Theodor Just. Chicago Natural History Museum. Published as No. 3 of Vol. 14 of *Chronica Botanica*. Autumn 1953. 160 pp. Il-

lustrted. Publishers: Waltham, Mass.; The Chronica Botanica Co.; New York City; Stechert-Hefner, Inc. Price, single copies, \$2.00.

This is a report of The Symposium on Plant Genera, organized by the American Society of Plant Taxonomists and the Systematic Section of the Botanical Society of America, at the meetings of the American Institute of Biological Sciences, Cornell University, Ithica, New York, September 10, 1952.

The major subjects discussed in the Symposium with the respective authors were: Plant Genera, Their Nature and Definition; the Need of an Expanded Outlook by G. H. M. Lawrence, Bailey Hortorium, Cornell University; the Anatomical Approach to the Study of Genera by I. W. Bailey, Arnold Arboretum and Biological Laboratories, Howard University; Floral Anatomy as an Aid in Generic Limitation by Arthur J. Earnes, Department of Botany, Cornell University; Cytogenetical Approaches to the Study of Genera by Reed C. Rollins, Gray Herbarium, Harvard University; Cytology and Embryology in the Delimitation of Genera by Marion S. Cave, Department of Botany, University of California; and Plant Geography in the Delimitation of Genera; The Role of Plant Geography in Taxonomy by Herbert L. Mason, Department of Botany, University of California.

In addition to the illustrations and tables are a number of facsimiles from early generic floras and each article is followed by a bibliography covering the specific field. Plant Genera is a scholarly production that will appeal to all students of taxonomy and related areas.—R. A. L.

Directory of Membership of the Rho Chi Society. 1953. 59 pp. Published by The Rho Chi chapter at the University of Wisconsin, School of Pharmacy. Price \$5.00.

The Directory includes a complete list of officers since its organization in 1922, a complete list of Council members since the Council was established in 1933, a complete chapter roll with the location and year of installation, and a complete alphabetical list of members up to June 1, 1953. Following each name is the chapter to which the member belongs and the date of initiation. With the exception of the active members, following each name is a key number indicating the character of membership. The membership list is impressive and indicates the potentialities within the Society for the promotion of pharmaceutical education and practice.

The writer does not know what the plans of the Wisconsin chapter are but he is hoping the chapter will furnish a supplementary annual list that will keep the Directory up to date until such time that a complete new directory is published. The production and maintenance of a directory is a monumental task and the Wisconsin chapter deserves both the moral and financial support of the membership in this effort. The Directory may be obtained by addressing Dr. Lloyd M. Parks, School of Pharmacy, University of Wisconsin at Madison.—R. A. L.

**INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN
ASSOCIATION OF COLLEGES OF PHARMACY**

New Mexico

University of New Mexico, College of Pharmacy, Albuquerque. (1952)
E. L. Cataline, Dean

New York

University of Buffalo, School of Pharmacy, Buffalo. (1939)

A. B. Lemon, Dean

Columbia University, College of Pharmacy of the City of New York. (1939)

E. E. Leusser, Dean

Fordham University, College of Pharmacy, New York. (1939)

James H. Kidder, Dean

Long Island University, Brooklyn College of Pharmacy, Brooklyn. (1939)

Hugo H. Shafer, Dean

St. John's University, College of Pharmacy, Brooklyn. (1951)

John L. Dandrea, Dean

Union University, Albany College of Pharmacy, Albany. (1945)

Francis J. O'Brien, Dean

North Carolina

University of North Carolina, School of Pharmacy, Chapel Hill. (1917)

E. A. Brecht, Dean

North Dakota

North Dakota Agricultural College, School of Pharmacy, Fargo. (1922)

W. F. Sudro, Dean

Ohio

Ohio Northern University, College of Pharmacy, Ada. (1925)

Albert C. Smith, Dean

University of Cincinnati, Cincinnati College of Pharmacy. (1947)

J. F. Kowalewski, Dean

Ohio State University, College of Pharmacy, Columbus. (1900)

B. V. Christensen, Dean

University of Toledo, College of Pharmacy, Toledo. (1941)

Charles H. Larwood, Dean

Oklahoma

Southwestern State College, School of Pharmacy, Weatherford. (1951)

W. D. Strother, Dean

University of Oklahoma, College of Pharmacy, Norman. (1905)

Ralph W. Clark, Dean

Oregon

Oregon State College, School of Pharmacy, Corvallis. (1915)

George E. Crossen, Dean

Pennsylvania

Duquesne University, School of Pharmacy, Pittsburgh. (1927)

Hugh C. Muldoon, Dean

Philadelphia College of Pharmacy and Science, Philadelphia. (1900)

Ivor Griffith, Dean

Temple University, School of Pharmacy, Philadelphia. (1928)

Joseph B. Sprowls, Dean

University of Pittsburgh, School of Pharmacy, Pittsburgh. (1900)

Edward C. Reif, Dean

Philippines

University of the Philippines, College of Pharmacy, Quezon City. (1917)

Patrocinio Valenzuela, Dean

Puerto Rico

University of Puerto Rico, College of Pharmacy, Rio Piedras. (1926)

Luis Torres-Diaz, Dean

Rhode Island

Rhode Island College of Pharmacy and Allied Sciences, Providence. (1926)

W. Henry Rivard, Dean

South Carolina

Medical College of South Carolina, Charleston. (1940)

William A. Prout, Dean

University of South Carolina, School of Pharmacy, Columbia. (1928)

Robert W. Morrison, Dean

South Dakota

South Dakota State College, Division of Pharmacy, Brookings. (1908)

Floyd J. LeBlanc, Dean

Tennessee

University of Tennessee, School of Pharmacy, Memphis. (1914)

Karl J. Goldner, Dean

Texas

Texas Southern University, School of Pharmacy, Houston. (1952)

Hurd M. Jones, Dean

University of Houston, College of Pharmacy, Houston. (1952)

N. M. Ferguson, Dean

University of Texas, College of Pharmacy, Austin. (1926)

Henry M. Burlage, Dean

Utah

University of Utah, College of Pharmacy, Salt Lake City. (1951)

L. David Hinser, Dean

Virginia

Medical College of Virginia, School of Pharmacy, Richmond. (1908)

R. B. Smith, Dean

Washington

State College of Washington, School of Pharmacy, Pullman. (1912)

Haskon Bang, Dean

University of Washington, College of Pharmacy, Seattle. (1908)

Forest J. Goodrich, Dean

West Virginia

West Virginia University, College of Pharmacy, Morgantown. (1920)

J. Lester Hayman, Dean

Wisconsin

University of Wisconsin, School of Pharmacy, Madison. (1908)

Arthur H. Uhl, Dean

Wyoming

University of Wyoming, College of Pharmacy, Laramie. (1951)

David W. O'Day, Dean

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To meet the demonstrated need for trained teachers and researchers in the field of pharmacy, the American Foundation for Pharmaceutical Education announces a limited number of Fellowships for students seeking graduate degrees in pharmaceutical subjects.

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